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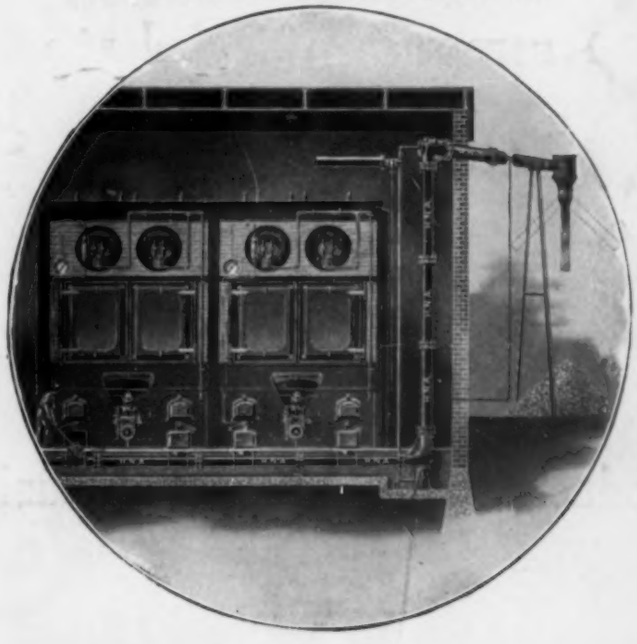

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Advertisers' Index, pages 134-135. Contents, page 55. "Where-to-Buy," page 66.
Engineering Directory, pages 106-107. Classified Advertisements, pages 114-133.

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THE IRON TRADE REVIEW

Vol. LXI Cleveland, November 22, 1917 *No. 21*

Freight Tie-Up Paralyzes Industry

Plants Make Futile Struggle to Maintain Operations Against Coal and Coke Shortages —Famine in Pig Iron is Accompanying Development—Pennsylvania Railroad Imposes Drastic Embargoes on General Freight

OPERATING difficulties in the iron and steel industry rapidly are reaching the acute stage. Unless remedial measures are quickly and effectively applied, production is destined to suffer much more sweepingly than the serious extent to which already it has been curtailed. The root of the trouble remains the coal and coke situation. A week or two more of present conditions, and it is predicted freely many merchant and independent steel works blast furnaces now on the ragged edge will join the growing list of idle stacks. Unless relief comes quickly, some of the largest steel plants in the Youngstown district now on part schedule must shut down entirely. The situation in the Connellsville region offers small encouragement for immediate improvement. Car supply of the past week averaged about 57 per cent and has dropped this week. Hundreds of loaded cars are stalled in the yards of the district. A proposal to pool all shipments of coke to independent furnaces has failed to command approval because of the wide diversity of requirements of these plants. The Pennsylvania railroad has imposed drastic freight embargoes in an effort to clear the congestion.

Iron Famine is Appearing

It is becoming increasingly difficult to satisfy pig iron inquiries in view of the heavy bookings and the way in which normal production is being upset by coke conditions. Virtually famine conditions have appeared at Pittsburgh, where large producers are willing to yield every point of delivery or tonnage to get metal. It is feared that this is only the beginning of a situation which will become intensely aggravated as winter weather comes on. Buyers are being forced to go far outside their usual channels to obtain iron, at increased cost to themselves, so that delivered prices have taken on greater market significance. The presence of the Steel corporation in the market as a buyer remains an unaccustomed development. In addition to 12,000 tons of basic taken by the American Bridge Co., for Pencoyd, various purchases of eastern and Virginia iron have been made. A leading Pittsburgh consumer has an open offer to take all the basic and bessemer for any delivery that may be had. The Emergency Fleet corporation has distributed 3300 tons of foundry iron among several Ohio producers.

Ask Revision of Contracts

Efforts of manufacturing users to induce the mills to modify the higher prices in old contracts are more in evidence. Various nut, bolt and rivet makers have revised outstanding contracts in these products to conform with the reduced fixed prices, and are calling upon the steel bar mills to extend them similar concessions. The bar producers are against the rewriting of this tonnage, believing it can be worked off gradually without hardship to the buyers. Builders of pleasure automobiles have asked suspension of unshipped tonnage because of the falling off in their business. The steelmakers have met this request with the statement that these commitments either must be specified or will be cancelled. The sellers have successfully resisted an attempt of buyers of semifinished material to have old bookings adjusted to the government schedule.

Trade Makes Adjustments

Despite these instances of dissatisfaction with the situation produced by the arbitrary drop of prices, the transposition of the market to the lower level is proceeding favorably. Another voluminous announcement of base prices and extras on primary and secondary finished lines is made this week by the general committee of the American Iron and Steel institute. The lines thus embraced include sheets, tin plate, strip steel, tacks, wood screws, chain, round billets and light rails. In the main, these lists of extras correspond to the established standards previously followed by the manufacturers. The leading wiremaker has put out a complete new schedule in conformity with the fixed bases in this line. Manufacturers' wire is placed at $3.35, Pittsburgh, or $2 under the previous price. Seasonable terms on fencing have been reestablished.

The Iron Trade Review

EDITORIAL

Regulation Serves Good Turn

GOVERNMENT regulation of iron and steel products is having the effect of establishing a uniformity which the market has not possessed for many months. The leveling of quotations under government auspices has restored regularity to a situation which has been the most divergent in the history of the industry. Prior to the fixation of prices there was scarcely a major product of iron and steel which did not possess practically as many schedules of quotations as there were manufacturers in that particular line. Conditions in plates, sheets, tin plate, wire products and pipe especially were conspicuous in this regard. The wide spread was the normal reflection of the balancing of the forces of limited supply and overwhelming demand. Under the government schedules these forces are suspended and the market has been confined within arbitrary maximum limits. As long as the tense condition of supply and demand continues, quotations may be expected to approximate the fixed maximum. As far as can be seen, therefore, little change may be expected in going quotations in the near future unless by government revision.

More important from the viewpoint of lasting significance, however, are the possibilities of changes in trade practice that may grow out of government regulations. By lending the weight of its approval to various schedules of extras and differentials, the government is establishing some new precedents and more firmly is implanting as market standards, others which previously were in partial effect or were being followed indifferently. In pig iron great impetus has been given toward making analysis the basis of buying and toward eliminating the dissimilarities which have characterized the use of varied symbols of grade in different districts. By fixing a definite and comprehensive schedule of pig iron differentials as determined by chemical standards, the producers under government auspices have done a piece of real constructive work which they never could have accomplished with the same effect or unanimity by acting on their own initiative.

No more propitious time than the present could be had for the uniform adoption of such market reforms as have demonstrated their needs in recent years. Under government regulations manufacturers have been able to accomplish a concertedness of action which would have been frowned upon under the regulations of peace conditions. They should utilize the opportunity to put into effect such sound and practical standards as will be of permanent benefit to the whole industry.

Make Curtailment Stimulate

CONSERVATION of men, money, material and motive power through the curtailment of manufacture by so-called nonessential industries will result in disappearance of certain commodities from the market and should increase production of essential war supplies. Plants geared to this nonessential production can, with ease in some cases and with difficulty in others, turn their efforts into other channels. This readjustment still would keep much of the labor at the throttle. It would permit capital and power, respectively, to continue to back up man and machine production. The burden of saving would be thrown largely upon the erstwhile ultimate consumer who could employ his money to double advantage in helping float additional war loans. Whether coal would be saved for use in present essential war plants is a question. It is doubtful if the surplus labor above that retained in the converted industries would go further than filling the ranks of the workmen drawn upon by the call to arms. How transportation would benefit, other than being further utilized in carrying necessary war materials, is not clear. Some raw materials, especially those produced by the steel and metal trades, could be used in other ways with slight loss. What other effects would be can only be surmised. But it is clear that curtailment should not mean shutting down of plants; there's too much at stake at home and abroad for that.

Better Appreciation of the Railroads

NOT so long ago whenever a railroad or a group of transportation interests petitioned the interstate commerce commission for permission to advance rates, shippers rushed to Washington in person or by representative and protested. Hearings resolved themselves into one long wrangle against allowing the railroads any further income and the rest of the business world seemed bent on opposing every advance.

The Illinois Manufacturers' association, representative of all industry in that commonwealth,

has sent a telegraphic message to the chairman of the commission strongly endorsing the position of the carriers. This message contained the following statement:

"The directors of the Illinois Manufacturers' association respectfully urge that the petition of the carriers in the official classification territory for an advance in freight rates be granted. It is almost the unanimous belief of shippers in the middle west that in order to maintain the transportation service of the country more money must be paid for the carriage. Please act promptly. We feel the situation is critical."

It begins to appear that a new day for the railroads is dawning based on a better appreciation by general business that a well-ordered and adequately equipped national system of transportation is essential to its own prosperity.

Standardize Scrap Trading

STANDARDIZATION was advocated and much progress was made in its direction before the war. But the war has given it a tremendous impetus. Machines, engines, trucks, aeroplanes—everything used in great quantities and admitting of uniformity of design have been standardized. Only a few industrial functions have been slow to change. One of these is the custom in a few trading centers of selling some grades of scrap by the gross ton and others on the now antiquated net tonnage basis which has been discarded by New York, Boston, Philadelphia, Pittsburgh and the valleys, Buffalo, Birmingham and recently by Cleveland.

Of the important trading centers only Chicago, St. Louis and Cincinnati retain net ton quotations, and in these districts the sentiment for uniformity of trading on the gross tonnage basis is developing. Especially has it grown since the government set maximum prices on the four principal grades—heavy melting steel, cast borings, machine shop turnings and No. 1 railroad wrought—and fixed all of them in terms of gross tons. Of these four grades only heavy melting steel had been quoted in gross tons in Chicago, St. Louis and Cincinnati territory.

Attempts in the past to group all scrap quotations in these centers under one classification of weight have met with opposition, but it is believed that adverse opinion, or largely so, has undergone a change in the face of war conditions. Making the gross tonnage basis the unanimous choice of all the dealing centers seems to be a job for the American Board of Scrap Iron Dealers, which has undertaken and is putting through other valuable reforms in the scrap business. There should be little difficulty effecting such a standardization of trading practice under present conditions.

Another Argument for Safety

DOES the iron and steel industry realize the full import of the safety-first movement? Does the reader as a representative of that great industry, in following the appeals and exhortations of safety-first advocates or the reviews of safety councils, or the work of safety committees, in trade journals, popular magazines and newspapers, ever stop to consider that he is one of the many individual factors having the power to decide whether or not this progressive effort will come in for the full share of attention which its importance merits? Perhaps, if he had heard the pitiful cries of some fellow being in distress or had looked upon the mangled body of some workman, who either refused to heed a warning or had not the power to do so, he would be helping actively to promulgate the doctrine of safety preparedness.

Since the first inspection law was enacted in 1870, the United States has produced 9,838,300,000 tons of coal. Complete records show that the death toll in producing this tonnage was 54,453 men. Thus the mortality rate was 3.30 for 1000 men over the 46-year period, or one human life was sacrificed for every 180,676 tons of coal produced. Correspondingly, a miner's chances of suffering death during a 17-year period of work was one out of 20.

Here is an industry employing 765,000 men, of whom upwards of 2500 are killed annually, and at least 180 per 1000 are injured to the extent that time is lost and in most cases medical attendance necessary. A reduction of 50 per cent in accidents would result in an annual saving of at least 1200 lives, to say nothing of the reduction in injuries and suffering now sustained by nearly 150,000 unfortunates. From the standpoint of the humanitarian, no greater good for the industry can be accomplished than to effect this reduction in this and kindred industries, and it is with this object in sight that this great safety-first campaign of education and enlightenment is being furthered.

Think it over.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 1136

PIG IRON

Bessemer valley	$36.30
Bessemer, Pittsburgh	37.25
Basic, Pittsburgh	33.95
Basic, eastern Pa.	33.00
Basic, Buffalo	33.00
Malleable, Pittsburgh	34.45
Malleable, Chicago	33.50
Malleable, Philadelphia	34.50 to 37.50
Malleable, Buffalo	33.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern)	$33 furnace base
2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern)	base plus 50c
2.75 to 3.25 silicon (No. 1X)	base plus $1.50
Over 3.25 silicon	$34.50, plus $1.00 for each ½ per cent of silicon.

No. 1X, Phila.	35.00 to 35.25
No. 2 foundry, Pittsburgh	33.95
No. 2 foundry, Cleveland	33.95
No. 2 foundry, Ironton	33.00
No. 1 foundry, Chicago	33.50
No. 2 foundry, Chicago	33.00
No. 2X foundry, Phila.	34.00 to 34.25
No. 2X foundry, N. J. tide	34.25 to 34.50
No. 2X foundry, Buffalo	33.50
No. 2 plain, Philadelphia	33.50 to 33.75
No. 2 plain, N. J. tide	33.75 to 34.00
No. 2 southern, Birmingham	33.00 to 33.50
No. 2 southern, Cincinnati	36.40
No. 2 southern, Chicago	37.50
No. 2 southern, Phila. del.	38.30 to 39.40
No. 2 southern, Cleveland	37.50
No. 2 southern, Boston	39.50
No. 2 southern, St. Louis	35.90
Virginia, No. 2X, furnace	33.50
Virginia, No. 2X, Phila.	36.77
Virginia, No. 2X, Jersey City	37.02
Virginia, No. 2X, Boston	37.27
Silveries, 8 per cent, furnace	46.00
Silveries, 8 per cent, Chicago	48.54
Low phos. standard, Phila.	55.00 to 56.00
Low phos. Lebanon furnace	50.00
Low phos., Pittsburgh	53.00
Charcoal, Superior, Chicago	37.50
Charcoal, Superior, Buffalo	39.75
Charcoal, southern, furnace	43.00

COKE

(At the ovens.)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Wise county furnace	6.00
Wise county foundry	7.00
Pocahontas furnace	6.00
New River foundry	7.00
New River furnace	6.00

FERRO ALLOYS

Ferromanganese	$225.00 to 250.00
Spiegel, 20 per cent fur.	60.00 to 65.00
Ferrocarbon titanium, carloads, maker's plant	160.00
Ferrosilicon, 50 per cent, Pittsburgh	150.00 to 160.00
Ferrosilicon, 50 per cent, Pitts., 1st quarter	130.00 to 150.00
Bessemer ferrosilicon, 9 per cent.	$54.00
Bessemer ferrosilicon, 10 per cent.	55.00
Bessemer ferrosilicon, 11 per cent.	58.30
Bessemer ferrosilicon, 12 per cent.	61.60
Bessemer ferrosilicon, 13 per cent.	64.90

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS

Open hearth, Pittsburgh	$47.50
Open hearth, Philadelphia	50.50
Open hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.00

SHEET BARS

Open hearth, Pittsburgh	$51.00
Open hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.00
Grooved skelp, Pitts.	2.90c
Sheared skelp, Pitts.	3.25c

SHAPES, PLATES AND BARS

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.185c
Structural shapes, N. Y.	3.195c
Structural shapes, Chicago.	3.00c
Tank plates, Chicago	3.25c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia.	3.435c
Tank plates, New York	3.445c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	2.90c
Bars, soft steel, New York	3.095c
Bars, soft steel, Phila.	3.085c
Cotton ties, Pitts., Nov.	$2.15
Bar iron, Chicago	3.50c
Bar iron, Philadelphia	3.685c
Bar iron, Cleveland	4.25c to 4.50c
Bar iron, New York	3.695c
Bar iron, Pittsburgh	3.50c
Hard steel bars, Chicago	3.50c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh, base	3.75c to 4.00c
Angle bars, Chicago, base	3.25c to 4.00c
Standard bessemer rails, mill.	$38.00
Stand. open hearth rails, mill	40.00
Light rails, 25 to 45 lbs., Chic.	70.00 to 75.00
Light rails, 25 to 45 lbs., Pitts.	75.00 to 85.00
Relayers, standard, mill	38.00 to 40.00
Relayers, light, Chicago	60.00
Relaying rails, light, St. L.	75.00 to 80.00
Spikes, railroad, Pittsburgh.	4.50c to 5.00c
Spikes, railroad, Chicago	5.00c to 5.25c
Track bolts, Pittsburgh	6.50c to 8.10c
Track bolts, Chicago	5.25c to 6.50c
Tie plates, Chicago	$70.00 to 75.00

WIRE PRODUCTS

(To jobbers; retailers 5 cents more.)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh	3.65
Galvanized staples, Pittsburgh.	4.35
Barb wire, painted, Pittsburgh.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	....

CHAIN, PILING, STRIP STEEL

Chain, ⅜ in. proof coil, Pitts.	9.00c
Sheet piling, base, Pittsburgh	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 7.00c.

Market Report Index

	Page
Weekly Market Review	1081
Pig Iron	1085
Coke	1087
Scrap	1088
Semifinished Steel	1088
Rails, Cars and Track Materials	1089
Ferroalloys	1090
Bars	1090
Wire	1091
Tin Plate	1091
Plates	1091
Structural Shapes	1094
Merchant and Cast Pipe	1094
Sheets	1095
Warehouse	1095
Nonferrous Markets	1112
Coke By-Products	1113
Refractories	1113
Machine Tools	1126

SHEETS

(In cents per pound.)

SHEET MILL BLACK

No. 28, open hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open hearth, Chic.	5.215c

TIN MILL, BLACK

No. 28, open hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open hearth, Chic.	6.465c

BLUE ANNEALED

No. 10, open hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open hearth, Chic.	5.715c to 6.215c
No. 10, open hearth, Phila.	4.435c

TIN PLATE

(Per 100 lb. box.)

Tin plate, coke base, Pittsburgh $7.75

IRON AND STEEL PIPE

BASE PITTSBURGH

Base Pittsburgh	Black Per cent off	Galv. Per cent off
¼ to 3 in., butt, steel	51	37½
¾ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	.30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

(Class B Pipe.)

Four-inch, Chicago	58.50
Six-inch and over, Chicago	55.50
Four-inch, New York	59.50
Six-inch and over, New York	56.50
Four-inch, Birmingham	48.00
Six-in. and over, Birmingham	45.00

Class A pipe is $1 higher than Class B.

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	2.90c
Bands, Pittsburgh	3.50c
Shafting, Pittsburgh, carloads	17 off to list

RIVETS

Structural rivets, Pittsburgh.	4.65c
Boiler rivets, Pittsburgh	4.75c
Rivets ⅞ in. and smaller, Pitts.	45 and 10 off

NUTS AND BOLTS

(Delivered within 20-cent freight radius.)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50 and 5 off
Cut thread	40, 10 and 5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, cold pressed nuts)

Rolled thread	50, 10 and 5 off
Cut thread	50 and 5 off
Larger and longer	40 and 10 off

(⅜ x 4 inches, cold pressed nuts)

Smaller and shorter	40 and 10 off
Larger and longer	35 and 5 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago.)

Quotations on leading products November 21, average for October, 1917, average for August, 1917, and average for November, 1916. Prices are those ruling in the largest percentage of sales at the dates named

	Prices Nov. 21, 1917.	Average prices Nov., 1917.	Aug. 1917.	Nov., 1916.
Bessemer pig iron, Pittsburgh..	$37.25	$37.25	$55.55	$30.35
Basic pig iron, Pittsburgh.....	33.95	33.95	52.75	25.95
*No. 2 Foundry pig iron, Pitts.	33.95	33.95	55.55	26.76
*No. 2 Foundry pig iron, Chic.	33.00	33.00	55.00	25.00
Lake Superior Charcoal, Chicago	37.50	37.50	59.50	21.95
Malleable, Chicago	33.50	33.50	55.00	25.00
**Southern, No. 2, Birmingham.	33.00	33.00	48.00	22.00
*Southern Ohio No. 2, Ironton.	33.00	33.00	55.00	30.00
Basic, eastern Pa.....	33.00	33.00	51.00	25.00
**No. 2X Virginia, furnace....	33.50	33.50	51.90	23.00
**No. 2X foundry, Philadelphia.	34.00	34.00	53.40	25.00
Ferro mang., delivered.....	237.50	302.00	400.00	160.00
Bessemer billets, Pittsburgh....	47.50	58.75	93.00	52.00
Bessemer sheet bars, Pittsburgh	51.00	65.50	96.00	52.00
Open hearth sheet bars, Pitts..	51.00	65.50	96.00	52.00
Open hearth billets, Pittsburgh.	47.50	58.75	93.00	52.00
Steel bars, Pittsburgh.....	2.90	2.90	4.00	2.78
Steel bars, Chicago.....	2.90	2.90	4.50	2.90
Iron bars, Philadelphia.....	3.685	4.935	4.914	2.659
Iron bars, Cleveland.....	3.64	4.50	4.75	2.70

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

	Prices Nov. 21, 1917.	Average prices Nov., 1917.	Aug. 1917.	Nov., 1916.
Iron bars, Chicago mill.....	$3.50	$4.50	$4.50	$2.52
Beams, Chicago	3.00	3.00	4.95	3.00
Beams, Pittsburgh	3.00	3.00	4.50	2.88
Beams, Philadelphia	3.185	3.185	4.914	3.059
Tank plates, Pittsburgh.....	3.25	3.25	8.80	3.35
Tank plates, Chicago.....	3.25	3.25	9.60	3.45
Tank plates, Philadelphia.....	3.435	3.435	10.164	3.909
Sheets, blk., No. 28, Pittsburgh	5.00	7.75	9.00	3.67
Sheets, blue anld., No. 10, Pitts.	4.25	7.855	8.50	3.30
Sheets, galv., No. 28, Pittsburgh	6.25	8.815	10.25	5.07
Wire nails, Pittsburgh.....	3.50	3.90	4.00	2.85
Connellsville fur. coke.....	6.00	6.00	10.00	3.75
Connellsville fdy. coke.....	7.00	6.00	12.50	5.50
Heavy melting steel, Pittsburgh	30.00	31.50	34.60	20.55
Heavy melting steel, eastern Pa.	27.00	26.10	32.80	20.00
Heavy melting steel, Chicago...	28.50	27.00	33.10	19.35
No. 1 wrought, eastern Pa.....	35.00	40.80	46.24	23.50
No. 1 wrought, Chicago, net ton	31.00	31.88	35.40	21.25
Rerolling rails, Chicago.....	36.00	36.00	41.90	24.90
Car wheels, Chicago.....	29.00	25.88	30.70	15.95

(For Additional Prices See Page 1136)

Famine Condition Shows in Pig Iron

Consumers in Various Districts Making Futile Efforts to Obtain Metal from Furnaces Sold Up or Handicapped by Coke Shortage—Steel Corporation Among Buyers—Liberal Sales Made in East

Pittsburgh, Nov. 20.—Famine conditions exist in pig iron in the greater Pittsburgh district. The shortage affects both steelmaking and foundry grades and its extreme seriousness is the occasion for the utmost concern. Apprehension is increased by the probability that the shortage will become more acute through the banking and blowing out of additional furnaces by reason of their inability to obtain adequate coal and coke supplies. With the approach of winter every effort is being made to improve traffic conditions. One of the major proposals is to eliminate the production of nonessentials for the double purpose of improving traffic conditions and to make a larger tonnage of iron available for essential requirements. Both large and small consumers are beseeching furnace interests for supplies. Stocks of the latter are entirely cleaned up and present bookings call for their full output. The United States Steel Corp. is extremely short of iron and is taking tonnages wherever it can obtain them. The American Bridge Co., being unable to secure basic for its Pencoyd plant from the Pittsburgh and southern districts, as it does usually, has bought 10,000 to 12,000 tons in the east and may buy more. Purchases in the east by Pittsburgh offices of the Steel corporation involve several thousand tons of various off-grades from Virginia and eastern Pennsylvania furnaces. A large independent steel company in the Pittsburgh district has put out a blanket inquiry for an unlimited tonnage of either basic or bessemer or both, for any delivery. Another steelmaker in the Pittsburgh district is inquiring for 15,000 to 20,000 tons of basic for second quarter. Foundries are combing the district for large tonnages. Many prospective buyers are asking producers to anticipate contracts, but the latter are declining to do so. The output of foundry iron has been curtailed considerably, owing to the fact that some furnaces, which ordinarily make such grades, have been turned to steelmaking iron. It is expected by some that iron from the south soon will be coming into the Pittsburgh district, although it is recognized that it will be extremely difficult to make shipments, owing to the scarcity of cars, a condition which prevails throughout the country.

Basic Leads Eastern Selling

Philadelphia, Nov. 19.—Large sales of basic again made up most of the activity in the pig iron market in this district during the past week. The Pencoyd plant of the American Bridge Co., which has been unable to secure sufficient iron from Steel corporation furnaces in the Birmingham and Pittsburgh districts of late, has purchased fully 12,000 tons here and temporarily is out of the market. The N. & G. Taylor Co. has closed for 6000 tons of basic for first half and the Phoenix Iron Co. is understood to have placed 5000 tons for first half. The Lukens Steel Co., which last week was referred to as having purchased 45,000 tons of basic for first quarter, probably will want another 15,000 tons for that position. Illustrative of the scarcity of eastern bessemer, is the sale of a moderate tonnage of western bessemer to a consumer here at $36.30, Chicago. Sales of standard low phosphorus

totaled about 1200 tons, for next year, at $53, furnace. Numerous small tonnages of eastern Pennsylvania low phosphorus were sold at $50, furnace, and fully 10,000 tons of low phosphorus now are under negotiation. Several inquiries have come out for malleable but none is to be had, even from Ohio furnaces. Scarcity of foundry iron has restricted the volume of business in that grade. The biggest buyer was the Norfolk & Western, which placed 4000 to 5000 tons for first half. This consumer probably will purchase more during the next few days. To such an extent is the output of foundry iron sold ahead that many furnaces now are unable to take on any more tonnage for first half. Two leading cast iron pipe makers are in the market for all the early tonnage they can obtain.

Big Sales Are Made

New York, Nov. 20.—The Pennsylvania railroad has purchased 11,800 tons of foundry iron for delivery over the first half of 1918. All of this tonnage was taken by central Pennsylvania furnaces on the government basis of $33 for 1.75 to 2.25 per cent silicon. A large New Jersey consumer has closed for 8000 tons of foundry for first half, the business being distributed among three makers. The Singer Mfg. Co. has added to its recent purchases, making a total of about 10,000 tons of foundry for first half for which it placed orders during the past three weeks. A leading locomotive company has bought 900 tons of foundry for first half for its Richmond, Va., plant. Numerous other lots, ranging from 2000 tons downward, have been placed. New inquiries which now are out, call for large blocks. The largest inquiry is from a New Jersey melter who wants 6000 to 8000 tons for first half. A Newark consumer wants 2000 tons for first half.

Supplies Not Demand

Boston, Nov. 20.—New business in iron is quiet, but this condition is in nowise a reflection of a lack of demand, so much as it is a lack of supplies. There is, as a matter of fact, a very keen demand for nearby iron, and if supplies were available, there is no doubt that a very good business could be done. The report that buyers are pounding the agents for deliveries on existing contracts is heard everywhere. That an urgent need of supplies exists in this section is evident from conditions on all sides. Assurance of deliveries is the all-important thing in determining the way an order is placed. The inquiry for a lot of high silicon iron, referred to a week ago, is understood to have been placed; the quantity was 500 tons and the buyer was a Maine consumer. Orders generally are for carload lots, or 100 tons, but there have been bookings of a few 300 and 400-ton lots of charcoal iron, and there is one seller that has moved several lots running from 300 or 400 tons to 1000 tons. Local distributors of Alabama irons do not show much anxiety about the high freight on these shipments; they declare that if they could get the iron they could sell it. There is very little free iron from any section, and the situation, according to general belief, is not likely to change soon. It is pointed out that the furnaces for practically a year have been taking business for the first half of 1918. Under the circumstances, it would be no great surprise if many producers soon would withdraw from the market for the first half. No new business now is being accepted for that period without being first submitted to the furnaces. The coke situation is somewhat improved, with some business going at $7 for Connellsville foundry and $6 for furnace.

Buffalo Furnaces Banked

Buffalo, Nov. 20.—Inquiry for pig iron was heavy in this district during the past week but not very much business was placed. With a reduction in production in the Buffalo district due to furnaces being forced out of blast through lack of coke and the heavy bookings of the past two weeks, very little if any iron is available from this district for shipment prior to April 1, 1918, and comparatively little tonnage is to be had for the second quarter of 1918. Furnaces are pursuing a policy of endeavoring to take care of regular customers with such limited free tonnage as they have for disposal. The consumer who has not bought steadily of one producer, finds considerable difficulty in filling his wants. Three interests in this district have been compelled to close down furnaces through lack of fuel. One of these furnaces will be out of the market for the first quarter, largely on this account. The furnace out of blast has been on foundry. Another furnace on foundry must go slowly if it is to remain in blast. Following the blowing out of a furnace in eastern New York, another interest announced the banking of a furnace today pending an improvement in the coke situation.

Shortage of Iron Grows

Cleveland, Nov. 20.—Producers are more concerned with pig iron supplies than they are with new business. Restrictions on output caused by the undependable deliveries on coke continue to exert much influence on sales. Inquiries are active and numerous but many of them are going unsatisfied because the metal is not available. Makers are predicting that the acuteness of this shortage will grow. Further tonnage has been distributed by the Emergency Fleet corporation. A lot of 3300 tons of foundry iron for early delivery to a southern Ohio engine builder was divided among southern and northern Ohio furnaces at the agreed prices. Other smaller lots of foundry have been placed by the Fleet corporation and several hundred tons of charcoal have been closed in a similar manner. Basic is in demand and difficult to locate. A northern Ohio steelmaker wants 8000 tons for second quarter. A large Pittsburgh consumer is out for 5000 tons for December. A sale of 1000 tons of prompt malleable was made in this territory for Mississippi river delivery. The 8000 tons of high silicon foundry for a Bedford, O., implement manufacturer remain open.

Demand Strong at Chicago

Chicago, Nov. 20.—Inquiry for all grades of pig iron continues strong and producers with anything to offer have no difficulty in making contracts. The active basic inquiry seems to have been satisfied and sales of approximately 30,000 tons have been made to consumers in the St. Louis district. Local producers have covered production almost in full to July 1. Consumers of malleable continue to seek further tonnage and sales are being made although metal of that character is growing rapidly less. Southern irons are not being offered, except in rare instances. Producers in the Birmingham district are not yet ready to take on business in competition with northern furnaces. Lake Superior charcoal is being sold freely. Small lots are being taken for prompt delivery and contracts are being made for first quarter and first half, third quarter and last half. Virginia iron, with high manganese and high sulphur, is being bought by some melters in this district. This iron is being sold at the government fixed price plus freight from Virginia furnace.

Supplies are Short

Cincinnati, Nov. 19.—The showing up of contracting is attributed to the short supply of iron that can be had for first half shipment. It is worthy of note that a number of foundry iron sales have been made for shipment this year and some of the contracts allow the metal to be moved in January and February, when desired.

Formerly this proviso probably would mean more to the purchaser than merely getting his iron when needed, but now all contracts are made strictly on the base price of $33 at furnace agreed on by ironmakers and the government, with future shipments taking neither an advance nor a reduction. Very little iron is to be had in the Virginia district, but in Birmingham territory there is some available that can be shipped to points where freight rates permit. High silicon iron is in great demand and the supply from southern Ohio furnaces is limited.

St. Louis Inquiry Heavy

St. Louis, Nov. 20.—Pig iron dealers in this market report a largely increasing demand for all grades. Inquiries for all sorts materializing this week will aggregate easily between 45,000 and 50,000 tons. Much of this demand is for basic and deliveries extend well into 1918. A large portion of the buyers say, however, they will take as much iron as they can get at once. The representative of one of the largest southern producers reported sales this week in this district aggregating 4000 tons of No. 2 foundry at the government figure. Setting of the differentials has loosened offerings in the Birmingham district though there is still very little tonnage to be had for prompt delivery.

Southern Selling More Freely

Birmingham, Ala., Nov. 20.—Inquiries for pig iron are more numerous and selling is more liberal in southern territory. Furnaces could take on a heavy tonnage if they were so disposed. Small sales continue and in the main regular customers are being accommodated. A considerable tonnage was disposed of recently for shipment into Pennsylvania at practically the government prices, this business coming this way because eastern furnaces were sold up far ahead. Bookings in the south now aggregate around 80 to 90 per cent of the probable make to July 1. A large proportion of the iron being shipped is at prices much in excess of the government figure of $33, furnace, for No. 2 foundry. It still is contended that the fixed price on No. 2 northern foundry will allow a quotation of $33.50 on No. 2 southern, but the $33 flat figure appears to be satisfactory to most makers. While the make of iron in Alabama is being maintained around the average for the past year, there has been some trouble experienced this month from poor working of furnaces.

Coke Shortage More Acute

Congestion of Traffic in Connellsville Region Places Many Consumers in Precarious Condition—Car Supply Under 50 Per Cent

Pittsburgh, Nov. 20.—An acute shortage of coke at blast furnaces and foundries in the greater Pittsburgh district has become intensified during the past week. This is due principally to the congested condition of traffic in the Connellsville regions. There is considerable tonnage of free coke that could be obtained, provided there was an available supply of cars and locomotive power, together with railroad labor. Coke consumers are making diligent inquiries for fuel, but the movement is extremely limited. Conferences have been held by coke operators with a view to pooling shipments as a partial remedy for the existing situation, but there is serious doubt that this expedient is practical. It has been pointed out that pooling cannot be satisfactorily done, owing to the different grades of coke required by furnaces. Wherever possible producers are routing shipments from districts nearest to the point of consumption. This also gives only partial relief, inasmuch as specific grades of coke have to come from certain batteries of ovens and, therefore, the routing of shipments by the shortest distance is often impossible. There has been one informal suggestion made that certain days be set aside for the movement of loaded cars in the coke regions and the remaining days devoted to the movement of empty cars. This proposal, however, has not yet been given serious consideration. The car supply yesterday was approximately 60 per cent, today it was 50 per cent and tomorrow it will be reduced to 30 per cent. Production for the week ending Nov. 10 was 315,808 tons, as compared with 332,423 tons for the preceding week, according to the *Connellsville Courier*.

Few Contracts Being Renewed

Cincinnati, Nov. 20.—The renewal of contracts by foundry coke producers has been attempted only on a comparatively small scale. A number of difficulties already are in the way of supplying customers on their contracts and further obligations are not desired by operators in the Pocahontas and New river districts. Wise county interests also are slow in taking on new business. Sales of Connellsville foundry coke have been made to old customers at $7, ovens, for first half. No prompt coke has been bought, with the possible exception of a few carloads, mostly by foundry users whose shipments were delayed. The furnace coke situation is somewhat of a puzzle. Agencies report none has been sold in this territory, and similar reports come from other districts.

Operating With Difficulty

Philadelphia, Nov. 19.—Much difficulty continues to be encountered by blast furnaces and foundries in this district as a result of the shortage of coke. In fact, the situation is as serious as ever and output is being interfered with at many plants through the impossibility of getting spot coke in anything excepting relatively trifling quantities. The only sales involve contracts for next year at $7, Connellsville ovens, for foundry and $6 for furnace coke.

Consumers Seek Coke

Chicago, Nov. 20.—Consumers of foundry coke find difficulty in covering their requirements for prompt delivery. The agreed price of $7, Connellsville, means $9.65, by-product ovens, at Chicago. A change in the method of selling has come about and coke is now quoted f.o.b. ovens, the consumer paying local freight from ovens to his plant. One effect of this condition is the increasing demand for Connellsville beehive coke, which formerly was not much of a factor in this market, as it can be delivered to

Situation is Tense

St. Louis, Nov. 20.—Dealers here describe the demand for coke as enormous and urgent. Consumers in the St. Louis district proper are loudly voicing their needs, and there have been inquiries from points which never before have dealt in this market. Among the inquiries received were some from New England, West Virginia, North Carolina, Canada, New Mexico, Florida and even one from Rhode Island. The car shortage is cutting a material figure but the dealers say the main factor is the government price, which they seem to think too low. Said the head of a leading brokerage house: "Prior to the fixation of the coke price we were in receipt of a number of letters from eastern brokers each week offering 72-hour foundry coke."

Scrap Sales Out of Line

Market Generally Fails to Reach Government Maximums But Some Pittsburgh Deals Exceed Fixed Level—Chicago Buyer Takes Steel

FOR COMPLETE SCRAP PRICES SEE PAGE 1136

Pittsburgh, Nov. 20.—Sales of heavy melting steel for prompt shipment at prices in excess of $30 per gross ton, f.o.b. consuming points, the level fixed by the government, are reported to have been made by some dealers in this district during the past week. It is also claimed that other grades, on which no prices have been fixed by the government, were sold at levels out of conformity with the established figures. Mills want action taken at once to see that this practice is stopped. A sale of 2500 tons of low phosphorus billet and bloom ends is said to have been made at $41, delivered, whereas the price generally quoted on this grade is $40 or less. The American Board of Scrap Dealers has taken cognizance of the situation and in a general letter to the scrap trade is said to have intimated that unless the practice is stopped immediately the government will find a way to punish offenders. It has been the rule rather than the exception, however, to sell at or below the fixed figures and their equivalents. There is an increasing tendency to sell at prices based on government levels, thus resulting in an upward movement. Sizable lots of heavy melting steel have been sold around $29, delivered. Considerable tonnages of No. 1 busheling, machine shop borings and several of the other more prompt grades have been moving quietly, valley mills being among the large buyers.

Sell Steel at $25, New York

New York, Nov. 20.—Demand for iron and steel scrap reflects a general improvement. No big transactions are noted, but small tonnages of practically all grades are moving more freely. Several thousand tons of heavy melting steel again have been sold to Pittsburgh dealers during the past week at prices equivalent to approximately $25, New York. Demand for foundry grades has shown a great improvement, due largely to the scarcity of pig iron. Eastern Pennsylvania iron mills also are buying wrought scrap in better volume.

New England Volume Expands

Boston, Nov. 26.—The passing of the uncertainty over the fixing of prices for old materials has been followed during the past week by a considerable expansion in business on the basis fixed by the government. Dealers' paying prices per gross ton, f.o.b. shipping points, follow: Wrought No. 1 long, $28 to $29; horseshoes, $28 to $29; cotton ties, $20 to $21; No. 1 machinery, $30 to $30.50; No. 2 machinery, $28 to $29; car axles, iron, $49 to $50; steel, $42 to $44; rerolling rails, $50; iron boiler plate, $34 to $35; bundled barrel hoops, $17.50 to $18; wrought iron pipe, $24 to $25; steel rails, $25 to $26; No. 1 railroad steel, $25 to $26; heavy melting steel, $24 to $25; axle turnings, $18 to $19; machine shop turnings, $15 to $16; cast borings, $17 to $17.50; drop forge trimmings, $21 to $22; cast iron car wheels, $30 to $32.

Eastern Demand Heavier

Philadelphia, Nov. 19.—Scarcity of pig iron has led to a greatly improved demand for scrap in this district. No large tonnages have changed hands, but numerous small sales constitute a good total. The grades now moving are principally rerolling rails, wrought pipe, car wheels, heavy cast and stove plate. Prices on these grades as well as of No. 1 forge have advanced. The grade most affected is rerolling rails, which are scarce; on this description the price went up $5. Heavy steel scrap is quiet.

Buying is Stronger

Buffalo, Nov. 20.—The old material market is strong. Inquiry is brisk and considerable selling is being done, indicating a general buying movement. It is believed the mills are now beginning to rebuild stocks which are known to have been low for some time. The movement is not confined to the Buffalo district and inquiries are being received from eastern Pennsylvania and Pittsburgh. The demand is active for heavy melting steel, turnings, car wheels and borings. Yard stocks are low. Dealers say the consumer who does not stock up will have considerable trouble later; on. The car stringency grows daily more acute, preventing anything approaching normal delivery. "The situation is serious," said one local dealer, "and will get to the point where there will not be any cars shortly." Dealers say there has not been any buying of shearing stock for the past two months. The price schedule remains unchanged.

Market Stronger Sentimentally

Cleveland, Nov. 20.—Scrap trading in this district is mainly between dealers. Consumers are not coming into the market actively, at least in Cleveland. Many of them were heavily stocked at the time the government fixed prices. The sentiment of the market is stronger; and although there has not been enough important dealing to test out higher prices, heavy melting steel is up $1, and machine shop turnings 50 cents. Heavy melting steel, on which the government maximum is $30 a gross ton, f.o.b. consuming point, is quoted here now at $28 to $29, delivered Cleveland; machine shop turnings, with a maximum of $20, are listed at $18 to $18.50. The government maximum on cast borings is $20; the present quotation here is $18.50. No. 1 railroad wrought remains at $1 to $2 under the government maximum of $35. Transportation conditions are worse. In some cases it is taking weeks to get a car of scrap across the city from one plant or yard to another.

Embargoes Cause Complaint

Cincinnati, Nov. 19.—The universal complaint of dealers here is regarding the embargoes on scrap consigned to various consuming districts. It is a hard matter to make shipments to mills in the Pittsburgh district. While consumers are not running short of scrap, dealers look for some urgent demands on the part of their largest customers, unless the situation is relieved at an early date.

Owing to the scarcity of charcoal iron, there is a heavy demand for old car wheels, but the supply is limited and no quotations that represent what this class of scrap is worth can be made on that account. No. 1 railroad wrought is higher, but few sales have been made.

Steel Block is Closed

Chicago, Nov. 20.—Aside from a fairly heavy tonnage of heavy melting steel taken by the leading independent last week, probably 15,000 to 18,000 tons, comparatively little trading has been done recently. Although maximum prices have been announced on a few representative items, consumers do not feel that this has cleared the situation, as it seems there is nothing to prevent other grades from going much higher. On the heavy melting steel sold, it is understood, about $29 per gross ton was done, with shoveling steel about $2 lower. Rerolling rails continue in light supply. Railroads continue to offer comparatively little

material, due to lack of cars and labor. The Monon is offering 490 tons, the Chicago Great Western 500 tons, and the Chicago, Milwaukee & St. Paul 3700 tons. The latter list includes 900 tons of steel rails, 500 tons each, of wheels, and No. 1 wrought, and 400 tons of No. 2 wrought.

Demand Has Broadened

St. Louis, Nov. 20.—While the demand for iron and steel scrap has been good throughout the week, actual transactions between consumers and dealers were relatively light. The period of readjustment is still on, and the car situation and further possible action by the government tend to keep the market in a rather feverish and uncertain state. Underlying sentiment is decidedly bullish, especially among sellers. Dealers have been endeavoring to buy miscellaneous mixed scrap. Consumers' stocks are low, and offerings of new material are extremely light. In spite of this, however, they are not entering the market to any extent, claiming that deliveries on old contracts are keeping them well supplied. Railroad lists are light, the only ones before this market during the week being as follows: Wabash, 1500 tons; Missouri, Kansas & Texas, 400 tons; Kansas City & Southern, 250; and Chicago & Alton, 200 tons.

Southern Market Livelier

Birmingham, Ala., Nov. 20.—While iron and steel scrap dealers say the market has improved and inquiries are more numerous, both from home and outside territory, there is complaint of short supplies and of cars. Quotations have changed little, if any, since last week. The government schedule of prices remains higher than going prices in southern territory. Heavy melting steel consumers in this district will offer no higher than $22.50, delivered, and their needs are being filled. No sales have been reported in this district at anything near the prices fixed by the government. Some of the prominent dealers say that they are a little apprehensive of making contracts for limited deliveries, not being sure of being able to get cars.

The William Whitman Co., Inc., Boston, has purchased the plant of the Bigelow Carpet Co. in Lowell, Mass., and leased it to the United States Cartridge Co., which will transfer its Watertown, N. Y., and Derby, Conn., plants to that city. The company will require 6200 more men, making a total of 14,000 operatives in its three Lowell plants.

Close Sheet Bars for 1918

Numerous Sales Are Closed on Government Basis of $51—Semi-finished Makers Will Not Revise Old Contracts

Cleveland, Nov. 20.—Various tonnages of sheet and tin bars for delivery through the first quarter of next year have been taken by sellers in this territory at $51, Youngstown. Considerable inquiry for semifinished steel of the same character remains in the market. Producers of semifinished material who were petitioned by holders of old contracts to revise prices to the government level have maintained their position and no adjustments of this kind will be made.

1918 Tin Bars Closed

Pittsburgh, Nov. 20.—Active demand continues to exist for billets and sheet bars. Extremely limited lots, however, are available for early shipment. Mills are well booked on contracts and unable to take new business involving consequential tonnages. Considerable difficulty is also being experienced in making shipments, owing to railroad embargoes, a special permit being necessary before tonnages can be moved. Tin plate makers have succeeded in covering part of their tin bar requirements for 1918. They have bought bars at the government price of $51, Pittsburgh and Youngstown, but in the event this figure is revised, contracts will be rearranged accordingly. Light tonnages of billet discards have been offered during the past week at $47.50, Pittsburgh and Youngstown, the price fixed by the government on billets.

Shell Rounds Allotted

Philadelphia, Nov. 19.—Among shell steel orders allotted to eastern steelmakers during the past week is 13,000 tons of rounds to the Cambria Steel Co. A leading eastern steelmaker has some soft rerolling billets to offer at the government price of $47.50, Pittsburgh. With this exception, semifinished steel is scarce. Numerous inquiries are out for slabs, including one from a Reading consumer. Numerous inquiries also are out for forging billets, including one for several hundred tons for Wm. Wharton Jr. & Co. The Bethlehem Steel Co. for some time has tried to get at least 5000 tons of sheet bars without success.

For the production of special steel for airplane parts Greaves-Etchells furnaces are to be installed by the Ford Motor Co., Detroit, and the Halcomb Steel Co., Syracuse, N. Y. The former company is to install one furnace and the latter, two. These furnaces are to be built by the Electric Furnace Construction Co., Philadelphia.

High Rail Price

Quoted on 14,000-Ton Inquiry—Talk of Fixing Standard Sections

Cleveland, Nov. 20.—The Texas & Pacific railroad is in the market for 14,000 tons of standard rails for forward delivery, and has been quoted as high as $75, mill, by some makers. There is more talk of the probable fixing of a price on rails and $60, mill, is mentioned for standard sections. Demand for light rails is active.

Standard Spikes Easier

Pittsburgh, Nov. 20.—Standard rails are extremely quiet, manufacturers being booked on contracts which make it impossible to deliver new orders before 1919. Some small tonnages of light sections are being sold at $75 to $85, Pittsburgh. Light lots of standard spikes also are being sold. Standard spike prices are easier at 4½c to 5c, Pittsburgh. Numerous inquiries are out for small spikes, one buyer asking for several thousand kegs. Small sizes, ⅜ and ½-inch, are quoted at 6.50c, Pittsburgh, by some makers, although this quotation might be shaded.

Divide Locomotive Order

New York, Nov. 20.—Although formal orders have not yet been placed, it is expected that either 1500 or 2000 locomotives will be placed at Washington for shipment to Russia. Half will be made by the Baldwin Locomotive Works and the other half by the American Locomotive Co. The Baldwin Locomotive Works has taken an order for 70 locomotives for Egypt.

The Eddystone Steel Co., Crum Lynne, Pa., which recently was purchased by John E. Sullivan, formerly sales manager of the Carpenter Steel Co., Reading, and John Bradley, formerly with the Midvale Steel Co., on Nov. 1 began rolling plates. The plant is equipped with a 15-ton, oil-burning, basic open-hearth furnace. The mill has capacity for rolling 3/16 to ⅝-inch plates up to 48 inches wide.

Object to Old Bar Prices

Nut, Bolt and Rivet Makers Want Mills to Rewrite Contracts as They Have Done—Auto Builders Ask Suspensions

Cleveland, Nov. 20.—More insistence that the mills revise prices on old contracts for steel bars to conform with the government maximum is being shown by some classes of consumers. Nut, bolt and rivet makers especially are demanding this adjustment, contending that they have made a similar revision of old contracts in their line to the basis of the revised schedules on their products. Various instances where such a rewriting of nut, bolt and rivet contracts actually has taken place have been ascertained. The steel bar producers, however, are opposing any revising of old contracts. They are also declining to accede to the request of pleasure automobile builders to suspend unshipped portions of contracts because of the falling off of business in the latter industry. The mills point out that under the terms of the contract the tonnage either must be specified as provided for or cancelled. Few new sales of soft steel bars are being made to the open trade at the 2.90c, Pittsburgh price, or any price. An inquiry for 160 tons of special bars for government work is current. Shafting makers are allowing buyers only a portion of their inquiries. Reinforcing bars are softer and 3.50c mill, is quoted.

Say Prices Are Too Low

Pittsburgh, Nov. 20.—Prices suggested by the American Iron and Steel institute committee on nuts, bolts and rivets provide a reduction of approximately $12 a ton under the previous open market quotations. The reduction in structural rivets is from 5.25c to 4.65c, Pittsburgh. Some manufacturers maintain these cuts are too severe and that it is impossible to take orders from domestic consumers at the revised levels. They point out they have contracted for steel bars at the high prices existing before the government fixed 2.90c, Pittsburgh, on this product, and that they are unable to get steel at this figure for manufacturing for domestic consumers. No difficulty, however, is experienced by them in obtaining steel bars at the fixed figure for government requirements. It is maintained until the present steel bar contracts have expired, two or three months hence, manufacturers will not be able to sell to domestic consumers at the suggested levels. Makers of steel bars have declined to revise contracts with nut, bolt and rivet manufacturers.

Domestic Market Quiet

Pittsburgh, Nov. 20.—While there is considerable demand for steel bars, makers are heavily booked with contracts, a large portion of which are for government requirements, and cannot take tonnages from domestic buyers for early delivery. Some bar iron makers do not approve of the price of $3.50 per 100 pounds, Pittsburgh, suggested by the American Iron and Steel institute committee. They claim that high grade bars cannot be made at this figure. Bar iron has been selling at from $4.50 to $4.75 per 100 pounds, Pittsburgh, or from $20 to $25 a ton over the proposed price. It is claimed that the cost of muck bar alone is from $65 to $70 a ton.

Concrete Bars at 2.90c

Philadelphia, Nov. 19.—Outside of sales of concrete bars, the bar market here is exceedingly quiet. Several good-sized sales of concrete bars mainly rolled from discards, have been made during the week at 2.90c, Pittsburgh. Sales of soft merchant bars, as a rule, embrace small tonnages to regular customers. Several moderate tonnages of machinery steel, ranging from 0.20 to 0.50 in carbon, have been made at 4.50c to 5.50c, Pittsburgh. Most of the iron bar mills have adopted the new price of 3.50c, Pittsburgh, on refined bars made from scrap. On double refined bars, made from new material, the price is 4c, Pittsburgh. Since the establishment of the new figure, demand has taken a spurt, especially from the jobbers who are placing first quarter tonnage. Demand for bolts, rivets, etc., is especially active.

Little Tonnage is Offered

Chicago, Nov. 20.—Practically the only buyer able to obtain soft steel bars at present is the government. Heavy requirements from this source already are announced and additional tonnage expected shortly prevents makers from taking on further lots from private users, because of uncertainty as to deliveries. Eastern mills represented here give the impression to representatives in Chicago that customers in this territory will not have much tonnage divided among them on account of excessive government needs. One eastern independent is able to supply small tonnages of selected sizes, but is not making contracts, selling only on specification with the order.

Shafting Demand Stimulated

Pittsburgh, Nov. 20.—Domestic consumers are buying fair sized lots of cold-rolled shafting in this district at 17 per cent off, Pittsburgh, in carload lots, as compared with the former price of 10 per cent off. The government price reduction has stimulated domestic demand, but whether full requirements be taken care of depends largely upon future war buying. Considerable tonnage is going to the construction of aeroplanes, detonators and trench mortars. The Emergency Fleet corporation has also taken large tonnages.

Hoops Sell at 5.25c

Pittsburgh, Nov. 20.—Sales of hoops are reported to have been made at 5.25c and of bands at 5.10c, Pittsburgh, during the past week. The market for bands, however, is quoted at the steel bar price of 2.90c, Pittsburgh, while hoops are given a differential of 60 cents per 100 pounds over that figure, or $3.50 per 100 pounds, Pittsburgh, in accordance with suggestions of the American Iron and Steel institute committee. Some makers contend these prices are not equitable and have not adjusted their schedules.

Ferro Orders

For the Navy Yards Finally is Placed at $225, Delivered

New York, Nov. 20.—The government order for 750 tons of ferromanganese for various navy yards, which was reported in last week's issue to have gone to F. W. Marshall & Co., at $249, finally went to another maker. The latter interest, after all other prices were in, submitted a quotation of $225, delivered, and the business was placed at this figure. The market on ferromanganese now may be quoted at $225 to $250, delivered. Current business continues of slight proportions.

The placing of approximately 18,000 tons of spiegeleisen week before last, cleaned up practically all of the pending inquiries for this metal. Current demand involves only odd tonnages. The market still is quoted at $60 to $65, furnace, both for spot and first half, and it is likely that this range might be shaded on good-sized lots.

Odd tonnages of 50 per cent ferro-

silicon have been sold during the past week at reduced prices and the market for the rest of this year is quoted at $150 to $160, delivered. Current inquiries are small.

Spiegeleisen is Easier

Pittsburgh, Nov. 20.—An easier tone appears to have developed during the past week in spiegeleisen. Inquiries involving fair sized tonnages are reported to have brought out a quotation of $60, furnace, or lower for first quarter. A sale on this basis is understood to have been made by an eastern furnace. The market for 80 per cent ferromanganese also appears softer. While this alloy still is being quoted at $250, delivered, for prompt shipment, it is probable this figure could be shaded.

Chicago Ferro in Demand

Chicago, Nov. 20.—Ferromanganese for delivery during first half of 1918 is being held at $250, furnace, and there is no available supply for the remainder of the year. Demand is in excess of supply.

Heavy Demands

For Tin Plate to be Made by Government and Allies

Pittsburgh, Nov. 20.—Extremely heavy tonnages of tin plate will be required by the government for 1918 in connection with its conservation program. In addition, heavy tonnages are needed for the allies. The remaining capacity is being allotted by manufacturers to regular customers. Tonnages will be shipped only to buyers engaged in the manufacture of essentials, thus greatly curtailing the output of novelties and specialties. Contracts for first half will be accepted as soon as makers ascertain the amount of steel that will be available for tin plate. It is expected the price to jobbers will be announced soon. Interest has been manifested in the ruling of the war industries board, which has the effect of forbidding jobbers from contracting for tin plate for their regular trade and then exporting it. The ruling reads as follows: "That no licenses for the exportation of tin plate will be granted, except to the manufacturers of tin plate, or to others who, either at the time of making application or before shipment out of the country, present satisfactory evidence that they have purchased the plate from a manufacturer on firm order from a purchaser abroad. This ruling applies to pending, as well as future, applications."

Mill Must Absorb Freight

Ruling of War Industries Board Producers Must Accept Pittsburgh as Chicago Basis in West Stirs Eastern Plate Makers

Philadelphia, Nov. 19.—Plate makers in eastern Pennsylvania are greatly exercised because the war industries board has ruled that on shipments to the Chicago district the mill will have to pay the freight. The war industries board contends that inasmuch as the base price was applied to Pittsburgh and Chicago as basing points it is up to the mills, wherever located, to sell on the basis of f.o.b. Chicago or Pittsburgh, according to destination of shipment, and irrespective of the mill's location. This ruling was made in the case of an eastern mill which is to ship a tonnage of plates to a Chicago interest which will fabricate them into ship steel for government vessels. Inasmuch as this ruling is a complete reversal of the ordinary method of making such a sale, which would be to quote a mill price plus the freight to Chicago, it is held by the maker concerned to be a violation of the spirit of the price agreement with the government. Large tonnages of plates were distributed among various mills during the past week in connection with government vessels to be built at Hog island, Philadelphia, by the American International Shipbuilding Corp. Government orders constitute practically the only business in the plate market. Mills which have been booking some universal and sheared plates, now practically are out of the market. Current inquiries are large. Several car builders are anxious to get good sized tonnages, as also are a number of fabricators and jobbers. Among export inquiries is one for several thousand tons of tank plates for Egypt and another for China. An eastern mill has received an order through the government for 22,000 tons of plates for Italy.

Inquiries Are Liberal

Pittsburgh, Nov. 20.—Inquiries for plates continue liberal in this district. Producers are unable to take tonnages, except infrequently. Small lots have been sold, the government price of 3.25c, Pittsburgh, being adhered to strictly. In all cases deliveries are dependent on government requirements. There has been no car buying during the past week. Mills are being operated at capacity, most of the tonnage being for the government ships and for car requirements for the war department. An inquiry is out for 5000 tons of skelp for export.

Ship Needs Heavy

Chicago, Nov. 20.—Practically nothing is being done in the steel plate market outside of government requirements for shipbuilding. The leading independent has just been awarded 4000 tons of ship material, which is to be furnished to fabricators in this vicinity. It is reported that a Seattle shipbuilder has taken ten steel ships requiring about 30,000 tons of steel, but no trace of an award of this tonnage has appeared in this district. Much interest is being manifested in the final disposition of contracts for plates for Japan.

Full Wire Prices

Fixed by Leading Producers—Manufacturers' Stock Placed at $3.35

Chicago, Nov. 20.—Although formal and definite announcement has not been made to the trade, the leading interest has lined up prices on wire products, following the announcement of the maximum price of $3.50, Pittsburgh, on nails. This gives a price of $3.25 on fence wire, $3.35 on manufacturers' wire, $3.65 on polished staples, $4.35 on galvanized staples, $3.65 on painted barbed wire, and $4.35 on galvanized barbed wire. The leading interest and some independents have announced spring terms on fencing.

Active Demand for Wire

Pittsburgh, Nov. 20.—Manufacturers in this district report an active demand for wire and wire products. Mills are taking new business, involving sizable tonnages, and are in a position to make rather satisfactory deliveries.

Manufacturers' Wire Fixed

Cleveland, Nov. 20.—The price of $3.35, Pittsburgh, per 100 pounds has been fixed by the American Steel & Wire Co. on manufacturers' wire. This is an adjustment to conform to the fixed price of $3.25, Pittsburgh, on plain wire, and is $2 per ton less than the price put out by this producer just before the agreed schedule was announced. A fair amount of selling in wire products has developed in this district.

Set New Prices for Steel Products

Members of General Committee of American Iron and Steel Institute Issue Supplementary List of Prices, Differentials and Extras on Products Not Included in Earlier Announcements

THE general committee of the American Iron and Steel institute, which has been working out a schedule of prices for all iron and steel products, has just issued a supplementary list of quotations. These embrace prices for all sizes of sheets, tin plate, round billets for seamless tubes, chains, cold-rolled strip steel, hot rolled finished strip steel, light rails, wood screws, shoe finders' goods and cut tacks, nails and brads. The new prices supplement the quotations determined last week and published in THE IRON TRADE REVIEW at that time.

E. H. Gary, chairman of the institute committee on steel and steel products, in presenting the schedules for sheets, tinplate and round billets, issued the following statement: "The committee on steel and steel products of the American Iron and Steel institute has received from a subcommittee a report based on information received from representative manufacturers covering a list of differentials and extras on sheets, tin plates and round billets for seamless tubes, and from such report and other data available, the committee has reached a conclusion as to fair and reasonable differentials and extras to be charged for these products and now recommends to the industry that the list of extras and differentials below stated be adopted to take effect immediately. The committee expresses the hope that there will be no hesitancy in accepting this recommendation."

Black Sheets

Gage	Price per 100 lbs.
30 add	20c
29 add	10c
28 add (carload quantities)	Base
27 deduct	5c
25–26 deduct	10c
22–24 deduct	15c
17–21 deduct	20c
15–16 deduct	25c
13–14 deduct	30c
10–12 deduct	35c

STANDARD SIZES

Gages Nos. 12 to 30, inclusive, 24, 26, 28 and 30 inches wide, by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28, inclusive, 36 inches wide by 96 inches and 120 inches long.

EXTRAS FOR LENGTH

Gage—Length	Extra per 100 lbs.
16 and heavier, 60 inches and longer	Base
16 and heavier, under 60 to 30 inches	5c
16 and heavier, under 30 to 18 inches	10c
17 to 18, over 60 to 120 inches	Base
17 to 18, over 120 to 132 inches	5c
17 to 18, over 132 to 144 inches	10c
17 to 18, under 60 to 30 inches	5c
17 to 18, under 30 to 18 inches	10c
19 and lighter, over 60 to 120 inches	Base
19 and lighter, over 120 to 144 inches	10c
19 and lighter, under 60 to 30 inches	10c
19 and lighter, under 30 to 18 inches	20c

EXTRAS FOR WIDTH

Gage—Width	Extra per 100 lbs.
16 and heavier, 24 inches and wider	Base
16 and heavier, under 24 to 12 inches	10c
16 and heavier, under 12 to 6 inches	15c
17 to 18, over 24 to 36 inches	Base
17 to 18, over 36 to 48 inches	5c
17 to 18, under 24 to 12 inches	10c
17 to 18, under 12 to 6 inches	15c
19 and lighter, under 24 to 12 inches	10c
19 and lighter, under 12 to 6 inches	20c
19 to 21, over 24 to 36 inches	Base
19 to 21, over 36 to 44 inches	15c
19 to 21, over 44 to 48 inches	25c
22 to 24, over 24 to 36 inches	Base
22 to 24, over 36 to 40 inches	20c
22 to 24, over 40 to 48 inches	40c
25 to 27, over 24 to 36 inches	Base
25 to 27, over 36 to 40 inches	25c
25 to 27, over 40 to 44 inches	40c
28, over 32 to 36 inches	10c
28, over 36 to 40 inches	40c
29 to 30, over 32 to 36 inches	10c

Galvanized Sheets and Long Terne Sheets

Gage	Price per 100 lbs.
30 add	50c
29 add	25c
28 add (carload quantities)	Base
27 deduct	15c
25–26 deduct	30c
22–24 deduct	45c
17–21 deduct	60c
15–16 deduct	75c
12–14 deduct	90c
10–11 deduct	$1.00

STANDARD SIZES

Gages Nos. 12 to 30, inclusive, 24, 26, 28, 30 and 36 inches wide, by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28, inclusive, 36 inches wide by 96 inches and 120 inches long.

EXTRAS FOR WIDTH

Gages—Width	Extra per 100 lbs.
10–15, over 32 to 40 inches	None
over 40 to 44 inches	10c
over 44 to 48 inches	20c
16–18, over 32 to 36 inches	None
over 36 to 44 inches	10c
over 44 to 48 inches	20c
19–21, over 32 to 36 inches	None
over 36 to 40 inches	20c
over 40 to 44 inches	30c
over 44 to 48 inches	40c
22–24, over 32 to 36 inches	None
over 36 to 40 inches	20c
over 40 to 44 inches	40c
over 44 to 48 inches	50c
25–26, over 32 to 36 inches	Base
over 36 to 40 inches	30c
over 40 to 44 inches	60c
27, over 32 to 36 inches	10c
over 36 to 40 inches	50c
over 40 to 44 inches	75c
28, over 32 to 36 inches	20c
over 36 to 40 inches	60c
29–30, over 32 to 36 inches	20c
24 and heavier, under 24 to 12 inches	15c
under 12 to 9 inches	25c
25 and lighter, under 24 to 12 inches	20c
under 12 to 9 inches	35c

EXTRAS FOR LENGTH

Gage—Length	Extra per 100 lbs.
16 and heavier, 60 to 144 inches	Base
16 and heavier, under 60 to 30 inches	5c
16 and heavier, under 30 to 18 inches	10c
17 to 18, over 60 to 120 inches	Base
17 to 18, over 120 to 132 inches	5c
17 to 18, over 132 to 144 inches	10c
17 to 18, under 60 to 30 inches	5c
17 to 18, under 30 to 18 inches	10c
19 and lighter, over 60 to 120 inches	Base
19 and lighter, over 120 to 144 inches	10c
19 and lighter, under 60 to 30 inches	10c
19 and lighter, under 30 to 18 inches	20c

Blue Annealed Sheets

Gage	Price per 100 lbs.
8 and heavier	Less 5c
9 and 10 (carload quantities)	Base
11 and 12	Add 5c
13 and 14	Add 10c
15 and 16	Add 20c

EXTRAS FOR LENGTH

Gage—Length	Extra per 100 lbs.
16 and heavier, 60 inches and longer	Base
16 and heavier, under 60 to 30 inches	Add 5c
16 and heavier, under 30 to 18 inches	Add 10c

EXTRAS FOR WIDTH

Gage—Width	Extra per 100 lbs.
16 and heavier, under 24 to 12 inches	Add 5c
16 and heavier, under 12 to 6 inches	Add 10c
16 and heavier, 24 inches and wider	Base

Painted and Formed Products

Extras per square are based on weight per square multiplied by extra per 100 lbs.

PAINTING (Per 100 Lbs.) GAGES

	29	25 to 28	19 to 24	12 to 18	Per 100 lbs.
Red oxide of iron	...	$0.25	$0.20	$0.15	...
FORMING (per 100 lbs.)					
2–2½–3 and 5 in. corrugated	.05	.05	.05	.05	...
2 V-crimp—without sticks	.05	.05	.05	...	...
⅝–1¼-in. corrugated	.10	.10	.10	...	...

3 V-crimp—without sticks	.10	.10	.10	...	...
Pressed standing seam—with cleats	....	.15	.15	...	...
Plain roll roofing—with or without cleats	.15	.15	.15	...	...
Plain brick sid'g	.20	.20	...	...	...

EXTRAS IN ADDITION TO ABOVE

Corrugating sheet crosswise	$0.10	$0.10	$0.10	$0.10	...
Curving—corrugated sheets, single curve	.25	.25	.25	.25	...
Curving—Corrugated sheets, double curve	.50	.50	.50	.50	...
Forming—sheets under 60 in. long to 30 in. incl.	.05	.05	.05	.05	...
Forming—sheets under 30 in. long to 20 in. incl	.10	.10	.10	.10	...
Forming—sheets und. 20in.long.	.25	.25	.25	.25	...

Lengths—Standard lengths of all forms are 60, 66, 72, 78, 84, 90, 96, 102, 108, 114, 120, 132 and 144 inches. Flat sheets extras will apply on lengths over 132 inches.

Sticks for V-crimp roofing, 25 cents per 100 lineal feet.

Miscellaneous Products

	Extra per 100 lbs.
Full cold rolled and annealed	15c
Single pickled, cold rolled and annealed	40c
Single pickled and oiled or limed	35c
Hot rolled, pickled and annealed	35c
Full pickled, full cold rolled and an'l'd	60c
Blue stovepipe stock	15c
Range steel to manufacturers	30c
(If patent leveled)	55c
Blue range steel	50c
(If patent leveled)	75c
Deep stamping or drawing	25c
Extra deep stamping or drawing	50c
Patent or stretcher leveling	25c
Oiling	10c
Lime finish	10c
Deoxidizing	15c
P. A. C. R. and reannealed for tinning	50c
Bow socket stock	50c
Shovel stock carbon .25 to .40	10c
Milk can stock	50c
Roller leveling	10c
Extra box annealing	15c
Long ternes, special finish	50c

SHEARING CIRCLES, ALL GAGES

9 to 10 gage	Add 25 per cent
11 to 16 gage	Add 30 per cent
17 to 18 gage	Add 35 per cent
19 to 20 gage	Add 40 per cent

Prices on circles lighter than No. 20 will be quoted on application. Prices of finished circles to be determined by adding the percentage extra to the price of the finished rectangle.

RESQUARING

5 per cent of price of sheet at time of resquaring.

PATENT LEVELING

25c per 100 lbs.

INSPECTION

Special inspection by buyer, 10c per 100 lbs.

EXTRAS FOR BOXING AND CRATING

	Per 100 lbs. net wgt. of sheets
Skeleton crates	40c
Skeleton crates, felt lined	50c
Tight boxes, unlined	60c
Tight boxes, felt lined	70c
Bundled with felt edge	10c

Crating extras are based on crates containing 500 to 600 pounds. For any material packed lighter or heavier than 500 to 600 pounds per crate, an extra charge will be made.

Note.—On all sizes other than standard, when specified in quantities of less than 4000 lbs. to the item, prices will be quoted on application.

Cut Tacks, Nails, Brads, Etc.

Cut tacks, nails, brads, etc., to the jobbing trade, in full case lots and in shipments of 300 pounds or more, with the usual terms and freight allowances, and subject to the customary advances for the retail trade, net base per 100 pounds, $8.80. To above net base add differentials for size and packing, less 10 per cent per 100 pounds in 100-pound keg packages.

	12 and over	10	8	6	4	3	2½	2	1½	1
Bill poster's tacks, blued	3.50	3.70	3.80	4.00	4.20	5.00	5.80	6.70	.....	.....
Bill poster's tacks, tinned	5.20	5.40	5.50	5.70	5.90	6.70	7.50	8.40	.....	.....
Am. carp. tacks, bright or blued	3.70	4.00	4.20	4.50	4.70	6.70	....	....	.....	.....
Am. carp. tacks, tinned or cop.	5.40	5.70	5.90	6.20	6.40	8.40	.....	.....	.....	.....
Upholsterer's tacks, blued	3.90	4.30	4.70	5.20	5.60	7.50	9.20	11.40	14.30	19.70
Upholsterer's tacks, tinned	5.60	6.00	6.40	6.90	7.30	9.20	10.90	13.10	16.00	21.40
American cut tacks, blued	4.10	4.50	4.90	5.90	7.00	8.80	10.50	13.70	18.50	25.40
American cut tacks, tinned	5.80	6.20	6.60	7.60	8.70	10.50	12.20	15.40	20.20	27.10
Gimp tacks, blued	3.90	4.20	4.30	5.40	6.20	7.80	11.30	15.40	22.10	26.70
Gimp tacks, tinned	5.60	5.90	6.00	7.10	7.90	9.50	13.00	17.10	23.80	28.40
Gimp tacks, japanned	6.40	6.70	6.80	7.90	8.70	10.30	13.80	17.90	24.60	29.20
Lace tacks, blued	5.00	5.60	6.20	7.50	10.50	13.30	14.60	17.50	22.90	29.20
Lace tacks, tinned	6.70	7.30	7.90	9.20	12.20	15.00	16.30	19.20	24.60	30.90
Lace tacks, japanned	7.50	8.10	8.70	10.00	13.00	15.80	17.10	20.00	25.40	31.70
Swedes' cut and trimmer's tacks, blued	4.20	4.60	5.00	6.00	7.10	8.90	10.60	14.20	18.90	26.00
Swedes' cut and trimmers' tacks, tinned	5.90	6.30	6.70	7.70	8.80	10.60	12.30	15.90	20.60	27.70
Basket tacks, blued and bright	5.20	5.70	6.50	8.70	11.20	14.20	18.90	22.70	28.50	30.80
Basket tacks, tinned	6.80	7.40	8.20	10.40	12.90	15.80	20.60	24.40	30.20	32.50
Solid head lining nails, japanned or silvered	5.60	6.00	6.40	6.90	7.30	9.20	10.90	.....	.....	.....

GOODS SOLD BY LENGTH

Prices on 100-lb. kegs.	2	1¾	1½	1¼	1⅛	1	⅞	¾	⅝	½	⅜
Clout and trunk nails, blued	3.20	3.30	3.50	3.70	3.80	4.00	4.20	4.40	4.70	5.40	7.50
Clout and trunk nails, tinned and coppered	4.90	5.00	5.20	5.40	5.50	5.70	5.90	6.10	6.40	7.10	9.20
Basket and chair nails, blued or bright	4.10	4.20	4.30	4.50	4.70	4.80	5.00	5.20	5.50	6.20	8.30
Basket and chair nails, tinned	5.80	5.90	6.00	6.20	6.40	6.50	6.70	6.90	7.20	7.90	10.00
Finishing nails, blued or bright	4.60	2.30	2.70	3.00	3.30	4.20	5.80	7.50	9.20	10.80	12.50

The 100-pound kegs are 40 cents less per 100 pounds in all sizes than 25 and 50-pound boxes; $1.00 less in all sizes than 1, 5 and 10-pound packages; $1.40 less in all sizes than ½-pound packages; $2.30 less in all sizes than ¼-pound packages; and $3.20 less in all sizes than ⅛-pound packages.

Light Rails

Base per 100 pounds, f.o.b. makers' mill, including 10 per cent short lengths, down to and including 24-foot, $3.

Cold Rolled Strip Steel

Base price, $6.50 per 100 pounds for 1½-inch and wider, 0.100-inch and thicker, hard temper, in coils, under 0.20 carbon.

Carpet Tacks

In Gross or Half Gross Boxes

Carpet tacks in gross or half gross boxes take the same proportionate prices as when packed in cartons of one dozen papers each.

Hot Rolled Finished Strip Steel

Base, f.o.b. Pittsburgh, per 100 pounds $4.50

Unfinished Hot Rolled Steel for Cold Rolling

Base, f.o.b. Pittsburgh, per 100 pounds $3.50

Chain

Base price for ⅜-inch common steel proof coil chain, self-colored or blacked, per 100 pounds f.o.b. Pittsburgh $8.00

Round Billets for Seamless Tubes

Use regular steel bar extras and differentials for sizes and carbon specifications.

Shoe Finders' Goods

Prices to the different classes of trade and under same conditions as goods on list of "Differentials of Sizes and Packing for Cut Tacks, Nails, Brads, Etc.," as follows:

Packing Extras

100-pound kegs bulk	Base
25-pound boxes bulk	.36
1-pound papers bulk	.90
½-pound papers	1.26
¼-pound papers	2.07
⅛-pound papers	2.88

No goods packed other than stated above.

Cobblers' nails—4/8 and longer, No. 16 gage in bulk—100-pound kegs .....12.00 base

Extra iron clinching nails—4/8 and longer in bulk—100-pound-kegs .....13.50 Base

Swedes pegging or cut nails—4/8 and longer in bulk—100-pound kegs .....13.50 Base

Channel nails—4/8 and longer, No. 18 gage in bulk—100-pound kegs .....12.00 Base

Some Errors Corrected

Some errors in the prices and differentials as announced by the general committee of the American Iron and Steel institute last week are officially pointed out. Boat spikes are $5.25, Pittsburgh, per 100 pounds, instead of $5 as originally given out. Deep stamping, automobile sheets, body stock prices are $6.20, Pittsburgh, per 100 pounds instead of $6.45 as published.

Awarded Tonnage Doubled

But October Gain in Structural Lettings is Due to Government Work—60,000 Tons of Ship Steel

New York, Nov. 20.—Work on the bookings of structural and bridge shops more than doubled during October. The records of the Bridge Builders' and Structural society show that during the month 61½ per cent, equivalent to 110,700 tons, of the entire capacity of the bridge and structural shops of the country was contracted for. This total, which is the largest since March of this year, is due mainly to the heavy structural and shipbuilding requirements of the government placed during October. October figures compare with the records of previous months as follows:

Month	Per cent	Approx. tonnage
October	61½	110,700
September, 1917	29	52,200
August	38	68,400
July	41½	74,400
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

Lettings during the past week have increased considerably. The major portion continues to originate in government's needs. The biggest letting was 1500 tons for a plate and angle shop for the American International Shipbuilding Corp. at Hog island, Philadelphia. It is expected that a decision shortly will be reached on buildings for Langley field near Old Point Comfort, Va. It is understood the J. G. White Engineering Corp., which is directing this work will let 1800 tons to the American Bridge Co. and 800 tons to L. F. Shoemaker & Co. Several railroad bridges were included in the lettings this week. One of the leading eastern Pennsylvania makers continues to offer plain shapes freely at 3c base Pittsburgh. With this exception, however, the mills are unwilling to sell.

Big Tonnage Finally Let

Philadelphia, Nov. 19.—The American International Shipbuilding Corp. on Saturday finally distributed contracts for the fabricated steel for the first 25 vessels it is to build for the government, involving slightly in excess of 60,000 tons. Bids shortly are to be asked on steel for 25 additional vessels. Altogether, the American International Shipbuilding Corp. now has contracts for 130 vessels. Only one of the large mills is offering tonnages of plain shapes for comparatively early delivery. This mill is seeking orders at the government base of 3c, Pittsburgh, and is giving reasonable assurance as to delivery. The demand for shapes for ordinary building work, however, is slow to improve. Purchases now are mainly by fabricators and jobbers for first quarter.

Increased Demand Shown

Pittsburgh, Nov. 20.—Increased activity characterizes the structural market. This business is being taken directly or indirectly by the government. Domestic inquiries are less numerous, buyers realizing that it is impossible to obtain promises as to when deliveries can be made. Sales are being made at the government price of 3c, Pittsburgh.

Crane Steel is Wanted

Cleveland, Nov. 20.—Government business calls for practically all the new demand for structurals. Local builders are figuring on three hammerhead cranes of unusual size for the navy department, which will require 2000 tons of steel each. There are also two other inquiries in the market for 500 and 1000 tons, respectively, for government crane work, which probably pertain to the same contract. An Ohio shop has taken 20 railroad turntables for Russia, requiring about 700 tons. There is practically no offering of structural shapes in this district at the fixed price of 3c, Pittsburgh.

More Activity in West

Chicago, Nov. 20.—Increasing activity marks the structural market in the west and an occasional tonnage of importance is being placed, in marked contrast, to conditions which prevailed up to a short time ago. One lot of 3500 tons has been placed. Fabricating shops in this territory are receiving constant additions to the tonnage for the Emergency Fleet corporation, which is putting them in much more comfortable position. The leading independent has booked 4000 tons of ship material to be distributed among fabricators in this part of the country.

CONTRACTS AWARDED

Plate and angle shop for American International Shipbuilding Corp., Hog Island, Philadelphia, 1500 tons to the McClintic-Marshall Co.

Addition to machine shop and foundry, the Falk Co., Milwaukee, 660 tons, to the Worden-Allen Co.

Two buildings for government aviation camp at Hampton, Va., 600 tons, to the Worden-Allen Co.

Power house, for Kansas City Light & Power Co., Kansas City, Mo., 3500 tons, to American Bridge Co.

Traveling gantry for Northern Central Railroad Co., Baltimore, Md., 144 tons to independent shop.

Building at Fullerton avenue, Chicago, for Stewart Mfg. Co., 130 tons, to Union Foundry Works.

Reinforcing bars for a Portland grain elevator, 1400 to 1500 tons, to the Pacific Coast Steel Co.

Plant No. 80 for the Shoelkopf Aniline & Chemical Co., Buffalo, 300 tons, to John W. Cowper & Co.

Turbine plant of the Fore River subsidiary of the Bethlehem Shipbuilding Corp. at Buffalo, 1500 tons, to the Aberthaw Construction Co.

Bridge for Pennsylvania railroad, 400 tons to an independent fabricator.

Bridge for New York Central railroad at Tonawanda, N. Y., 500 tons, to Phoenix Iron Co.

Government buildings at Lake Denmark, N. J., 430 tons to Snare & Triest.

Bridges for Long Island railroad, 180 tons to Bethlehem Steel Bridge Co.

CONTRACTS PENDING

Storage building at New York, 600 to 700 tons, bids being taken by navy department.

Pier shed at Hampton Roads, Va., 350 tons. General contract to H. P. Converse & Co.

Building for Langley field, near Old Point Comfort, Va., 1800 tons expected to go to the American Bridge Co., and 800 tons to L. F. Shoemaker & Co.

Addition to storehouse for New York Edison Co., Fordham Station, New York. Bids being taken.

Brass foundry at Washington navy yard, bids being taken.

Eight buildings for American International Shipbuilding Corp., Hog Island, Philadelphia, 1000 tons, bids being taken.

Additions to Philadelphia navy yard, 200 tons, bids being taken.

Far in Arrears

Are Deliveries on Pipe Contracts—Boiler Tubes Are Adjusted

Pittsburgh, Nov. 20.—Manufacturers of iron and steel pipe in this district are extremely busy operating on contracts. A large portion of the tonnage is for government requirements. In the domestic trades orders are being filled in accordance with their urgency. The National Tube Co. is from 58 to 65 weeks behind on contracts for lap weld and from 18 to 20 weeks behind on butt weld steel pipe. Manufacturers have adjusted themselves to the new card providing 51 per cent off on black steel pipe, base size, and 37½ per cent off on galvanized. No change in prices was made by makers of iron pipe, who reaffirmed their old discounts of 33 per cent off on black and 17 per

cent off on galvanized. Requirements of such consumers as gas and oil interests are being given careful attention. New discounts on iron and steel boiler tubes also have been arranged in accordance with the announced schedules providing 30 per cent off, Pittsburgh, on steel tubes, 3½ to 4½ inches, less carloads, and 12½ per cent off on iron boiler tubes, 3½ to 4½ inches, carloads, Pittsburgh. Large tonnages of boiler tubes are being taken by the Emergency Fleet corporation.

Venezuela Wants Lot

New York, Nov. 20.—The largest new inquiry for cast iron pipe is one from Venezuela for 400 to 500 tons of 2-inch to 14-inch pipe. Outside of private buying, which does not involve any considerable tonnages, the most of the domestic business is in small tonnages which are being let by the government for camps at Mineola and Yaphank, L. I., and elsewhere in the east. No letting has been made of the 2900 tons for military uses in France. Prices continue unchanged at $56.50, New York, for 6-inch, Class B, and $59.60 for 4-inch, Class B.

Market is Inactive

Chicago, Nov. 20.—Practically nothing is being done in cast iron pipe, as the approach of winter prevents further extensions and cities are not inquiring for next year's requirements. Bids will be opened at Jackson, Mich., Nov. 26, on 167 tons. Alternate bids taken at Wooster, O., Nov. 19, on steel, concrete and cast iron pipe are unsettled.

Essentials Govern Sheets

Mills Parceling Out 1918 Tonnage to Consumers According to Importance of Use—Deliveries Being Well Maintained

Pittsburgh, Nov. 20.—Manufacturers of sheets have opened their books for 1918 business to regular customers only. Producers are working out allotments to the trade. The American Sheet & Tin Plate Co. has arranged this by sales districts, according to its output and tonnages will be accepted at the fixed prices for first half, except in the case of galvanized sheets which will be sold for first quarter only. It is proposed by producers to limit tonnages exclusively to manufacturers of essentials. Large orders already have been booked for delivery next year and there is an active inquiry for all grades. Differentials announced by the American Iron and Steel institute committee, last week, are in conformity with past trade customs. It is not known what proportion of requirements usually consumed by domestic buyers can be allotted. This is due to the uncertainty over the supply of sheet bars.

This arises from the diversion of capacities, to the production of forging billets for the manufacture of shells and for conversion into plates. It is also desired to supply tin mills as fully as possible to take care of canning demands.

Japan Buys Sheets

Philadelphia, Nov. 19.—Considerable buying of sheets developed here last week including one lot of about 2000 tons of black sheets to Japan. The latter went at a price only slightly higher than the government figure. Numerous inquiries are pending. As a rule the mills are sold up for this year and are taking on tonnages for first quarter. Government prices are being strictly observed on domestic business.

Chicago Market Active

Chicago, Nov. 20.—Since definite prices have been announced on steel sheets, consumers are going into the market actively and are contracting for all grades. Mills for the most part are not making contracts, but are selling on specification for delivery which in many cases will be first quarter or first half. It is understood one important producer is making contracts with regular customers covering half their minimum requirements. Recently announced maximum prices represent the quotations being made generally.

Deliveries Keep Up Well

Youngstown, O., Nov. 20.—Government specifications for sheets are absorbing a large percentage of the production of the mills in this territory although not to such an extent as to work hardship on the consumer whose contracts were closed some time ago. In most cases tonnages of sheets which are now being shipped to the domestic trade are only from two weeks to a month late in delivery. While inquiries for sheets are numerous, some mills are reluctant to accept new business at present in view of future demand expected from the government. The leading valley sheetmaker has not opened his books for 1918 business. However, a few small contracts have been closed for first quarter by one of the valley makers. Since the cost of spelter and pickling solutions are high, some sheetmakers contend that the spread between black and galvanized sheets does not yield a fair profit considering the spread between other classes. This probably explains why one sheetmaker in the valley has withdrawn altogether from the galvanized sheet market.

Warehouse Prices

In All Districts Are Adjusted to New Fixed Schedules

Boston, Nov. 20.—Jobbers in steel products are pretty much up in the air as a result of the latest government suggestion with regard to warehouse prices. The jobbers have contracts for mill supplies made at much higher prices than prevail today, and to have to sell at the suggested prices would entail considerable loss. The effort is now being made to get the government to allow the maintaining of present prices until at least part of the high-cost stocks are disposed of. Meanwhile, recent prices are quoted, but they are nominal. Quotations follow: Plates, narrow, 7.25c, wide, 11.50c; shapes, 6c; steel bars, small, 5.50c; shrapnel, 6c; iron bars, 5.50c; No. 28 gage black sheets, 7.75c; 28 gage galvanized sheets, 8.50c; 10 gage blue annealed sheets, 7.35c.

Chicago Stores Busy

Chicago, Nov. 20.—Increasing demand for materials from warehouses is noted, and it is impossible to fill all demands. New prices have gone into effect in accordance with the fixed differentials announced last week.

Cincinnati Prices Fixed

Cincinnati, Nov. 20.—Revised warehouse quotations on structural material and bars are as follows: Plates, ¼-inch and heavier, 4.43c; structural shapes, 4.18c; steel bars, 4.08c, and twisted bars on the following schedule; ¼-inch, 4.88c; ⅜-inch, 4.63s; ½-inch, 4.43c; ⅝-inch, 4.33c; ¾-inch to 1-inch, 4.23c.

St. Louis Makes Revision

St. Louis, Nov. 17.—A sharp reduction in warehouse prices of semi-finished materials took place here this week. The Illinois Steel Warehouse Co. announced a cut of from 4.55c to 4.17c on steel bars; from 5.05c to 4.27c on shapes.

War Board

Formed by American Foundrymen's Association to Aid Government

To provide a point of contact between the foundry industry of the country and the various departments of the government purchasing castings, the American Foundrymen's association has organized a war service board of five members, as follows: R. A. Bull, chairman, Duquesne Steel Foundry Co., Pittsburgh; J. C. Haswell, Dayton Malleable Iron Co., Dayton, O.; G. H. Clamer, Ajax Metal Co., Philadelphia; H. D. Miles, Buffalo Foundry & Machine Co., Buffalo, and C. C. Smith, Union Steel Castings Co., Pittsburgh.

The personnel of this board is representative of every branch of the foundry industry, including gray iron, steel, malleable iron and nonferrous metals. Furthermore, its members are affiliated with the leading organizations of casting manufacturers of the United States, as follows: American Foundrymen's association, National Founders' association, American Institute of Metals, American Malleable Casting association and the Steel Founders' society.

In view of the tremendous task undertaken by this board, numerous subcommittees undoubtedly will be appointed to represent the various lines of each branch of the industry. A survey of the foundry trade of the country undoubtedly will be made to ascertain the class of work for which each shop is best adapted. The establishment of an office in Washington is being considered.

On page 1114 of this issue is published the report of the meeting of steel foundrymen at which a committee was appointed to co-operate with the iron and steel committee of the American Iron and Steel institute for the purpose of readjusting prices of steel castings to conform to the revised prices on pig iron and steel products.

Crushed Coke Reduced

Washington, Nov. 20.—Changes in base prices of coke announced and effective today reduce crushed coke from $7.30 to $6.50, Connellsville. No other base prices are changed. A price on by-products coke produced in New England will be announced later. Gas coke price will be the same as by-product.

With the transfer of the Meriden, Conn., plant of the New England Westinghouse Co., to the Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., announcement is made that the entire working force is retained.

War Machine

Is Partially Reorganized by Appointments of Willard and Coffin

Washington, Nov. 20.—Reorganization of the government's war machine was partly effected yesterday in the appointment of Daniel Willard as chairman of the war industries board and Howard E. Coffin as chairman of the aircraft board. Mr. Willard succeeds Frank A. Scott, who resigned because of ill health. Mr. Coffin, who was chairman of the old aircraft production board, really succeeds himself. Mr. Willard was chairman of the advisory commission of the council of national defense, the parent body of the war industry board.

Mr. Coffin received the appointment from President Wilson as one of three civilian members of the aircraft board who are to serve without pay. B. F. Howe, New York, a director of the International Harvester Co., has been named one of the other two civilian members and the third is still to be appointed. The other members are: Admiral D. W. Taylor, Captain M. E. Irwin and Lieut. Com. A. K. Atkins, representing the navy, and Brig. Gen. George O. Squier, Col. E. A. Deeds and Col. R. E. Montgomery, representing the army.

Places Drastic Embargo

New York, Nov. 21. (By wire.)—The Pennsylvania railroad has placed an embargo on freight originating on all lines east of Pittsburgh, as well as on all freight originating on connecting lines and destined for points on or by way of the western Pennsylvania division. Government freight food, coal for by-product ovens and coke for blast furnaces and limestone are excluded.

Takes Shell Forgings

Pittsburgh, Nov. 21. (By wire.)—The Crucible Steel Co. of America has taken an order from the British government for 150,000 6-inch shell forgings. No price has been set but it is practically agreed it will be between $17 and $22 each.

The Non-Ferrous Metals

Copper Lead Spelter Tin

New York, Nov. 20.—Government fixing of prices for the various metals is proceeding steadily but gradually. The zinc committee, recently appointed and including representatives of a dozen leading producers, has held several meetings and today completed its work, arriving at a definite price, for spelter on sales to the government, the allies and the public, and determining conditions under which sales are to be made. This result has been forwarded to Eugene V. Meyer, in charge of spelter and other metals excepting iron and steel, for the war industries board, and announcement of the price will be made in a few days.

Demand for spelter continues very light, owing to the curtailed production of brass for other than government work and to the present small output of galvanized sheets. Prime western is quoted 8c, St. Louis, for prompt, November and December shipment; 8.12½c to 8.25c for shipment in the first quarter of next year.

The copper market has been bare of development the past week. Dealers and jobbers have not yet been given permission to sell copper at prices above the fixed price and consequently any activity that may exist in small lots is under cover. It is rumored that a 5 per cent commission will be allowed on sales of less than car load lots, which would bring the price to 24.67½c. The Copper Producers' committee still is working out deliveries on old contracts and taking care of the government and allied requirements. It does not seem probable that much if any new copper will be delivered at the 23.50c price this year.

Dealers have held the reins in the lead market of late. Most of the producers are not selling at present and there is just about enough demand current to keep prices steady at 6.75c, New York, for spot lead in the east and 6.37½c to 6.50c, St. Louis, for shipment from the west in November or December.

The tin situation continues acute. No sales of Straits or Banca tin have been reported this week and as yet no signs of supplies of the metal are in sight. The efforts of the tin committee of the American Iron and Steel institute so far have resulted in no relief to consumers who are badly in want of tin. Some spot Chinese tin arrived from the Pacific coast this week, resulting in an easier tendency in this grade, sales being made today at about 66.50c, New York.

No activity is evident in the antimony market. Chinese and Japanese brands are quoted 14c to 14.25c duty paid for spot and November delivery.

The outside aluminum market has been featureless, with little demand in evidence for either remelted or virgin ingot. The government has not yet fixed a price on aluminum, still obtaining its supplies at 27c, which is a 10c a pound concession granted by the American producer from its regular contract price. In the outside market No. 1 virgin ingot continues quoted 36c to 37c; No. 1 remelted, 35c to 36c; and No. 12 alloy, 27c to 28c.

Conveyors Reduce Boiler House Expenses

BY HORACE GOLDSTEIN

SIMPLICITY, cleanliness and economy go hand in hand as essential features of a modern boiler house, and it is with pride that engineers and owners point to a well-designed and up-to-date installation. In the last decade constantly increasing attention has been given to the handling of coal and ashes. Conveying equipment is fast becoming a standard part of all boiler houses. The safety first movement and the scarcity of coal and labor have played an important role in bringing about this condition. In order to attract engineers, firemen and other laborers employed in boiler houses, it became necessary for owners to make certain inducements in addition to the one of wages. When vacancies exceed the number of available men, the workman usually chooses the safest, cleanest and most modern plant. The owners of such plants generally have the pick of the labor market, and therefore, obtain an efficient working force. Fig. 1 shows a modern boiler room with labor-saving devices including a carrier for coal and ashes, storage bins with spouts and automatic stokers. The safety first devices include gear guards, hand rails, stairs in place of ladder, conveyor casing at floor level, and a rug on the floor to prevent slipping.

In connection with each boiler house equipment the problem of coal storage has to be solved. This is by no means an easy one. It must be examined from all sides; the points of advantage and disadvantage of the several schemes must be carefully weighed and studied. The amount of coal to be carried in storage, if any at all, is a most important consideration. The storage pile assures continuous operation, and minimizes the likelihood of interruptions, which, at the best, are troublesome and costly. The initial and operating costs of a plant without storage facilities are smaller than those in which storage is provided. The difference, however, is usually small and represents money well spent. This extra expenditure may be compared favorably with the premium of an insurance policy. Where the storage pile can be filled when the price of coal is low and the supply plentiful, usually enough can be saved to exceed the expense of the storage plant. In general, the storage capacity should be large enough to supply the demand over the longest interruption likely to occur. The conveying equipment should be large enough to supply the daily consumption, plus a capacity necessary to replenish the storage in a reasonable length of time. No storage is necessary if the supply is regular and the coal may be purchased advantageously at all times, both as to price and quality.

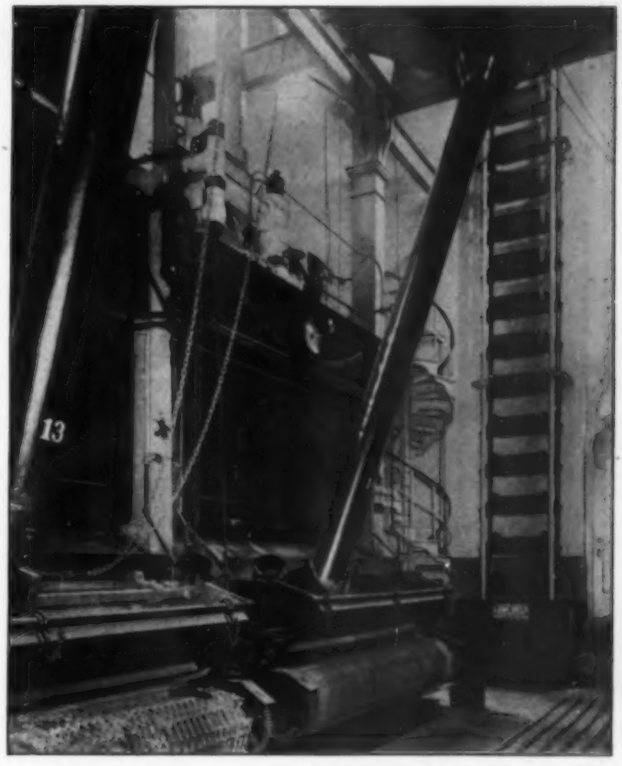

FIG. 1—MODERN BOILER ROOM WITH LABOR-SAVING AND SAFETY DEVICES

In nearly all cases, coal and ash handling equipment shows a direct financial saving over the old method of hand shoveling; but often the total saving cannot be figured in dollars and cents. Harmony and satisfaction among the workmen and permanency of the organization are factors of incalculable value.

Until recently it was universal practice to handle the coal and ashes in separate machines. Some engineers still adhere to this practice, but recent improvements in details of design and manufacture which have been vindicated by a number of practical installations using one machine for both purposes, are winning the widespread approval of engineers and owners. An ideal conveying system must:

Be least affected by materials handled,
Require a minimum amount of power to operate,
Be flexible and reliable,
Operate slowly to reduce the wear, vibration and dust,
Be clean in loading and discharging,
Be simple in design.

The pivoted-bucket or gravity carrier is practically the only machine which meets these requirements. It

Horace Goldstein, author of this article, is affiliated with the Link-Belt Co., New York.

Capacity of Conveyors at Various Speeds

Bucket, pitch—width inches	Pitch of chain, inches	Carrying capacity of bucket in cu. ft.	Capacity of coal, tons per hour	Speed, ft. per minute
18 x 15	18	0.68	15– 20	30–40
18 x 21	18	0.94	20– 30	30–40
24 x 18	24	1.68	40– 50	40–50
24 x 24	24	2.24	55– 70	40–50
24 x 30	24	2.80	75–100	40–50
24 x 36	24	3.36	90–120	40–50
30 x 24	30	3.50	95–120	45–60
30 x 30	30	4.37	110–160	45–60
30 x 36	30	5.25	140–190	45–60
36 x 36	36	8.50	210–330	50–80

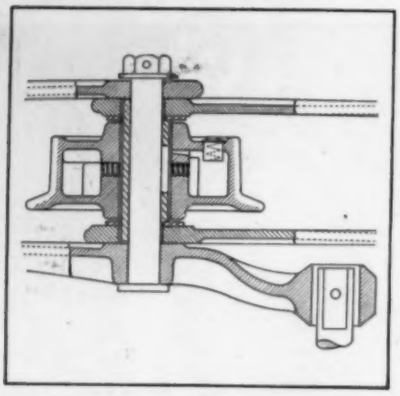

FIG. 2—DIAGRAMMATIC VIEW OF CHAIN JOINT

consists of a continuous series of buckets suspended between two strands of endless chains, and arranged so that the buckets at all times maintain their carrying position by gravity.

Details of Chains and Buckets

The malleable iron chains and buckets are long-pitched, usually 18, 24, 30 or 36-inch. The enclosed oiling rollers at the joints are from 6 to 8 inches in diameter. These rollers turn on case-hardened steel bushings which are forced into the inner links. The pins which pass through the bushings are securely held in the outer links. All movement in this joint, therefore, takes place between the pin and the bushing. This arrangement affords a long bearing surface. The details of this bearing are shown in Fig. 2. The buckets are malleable iron castings of the overlapping type, the lips being so shaped that they do not carry any material or allow any spill at the turns or corners. This overlapping feature makes of the series of buckets a continuous apron which can be loaded at any point on the horizontal run. This feature has the advantage of doing away with the timing of the loading. The buckets are automatically overlapped and separated as indicated in Fig. 5. The buckets are suspended from cross rods, which in turn are carried on extensions of the inner links beyond the chain joints, so that in passing around the wheels at the turns, the buckets travel on a larger circle than the chains. This link extension is shown in Fig. 2. Pivoted bucket carriers are made in various sizes. The accompanying table gives the capacity of conveyors at different speeds.

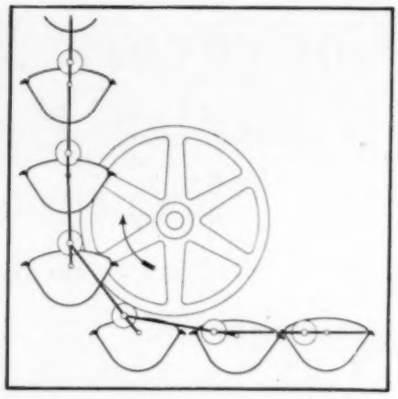

FIG. 5—DIAGRAM OF BUCKET ASSEMBLY

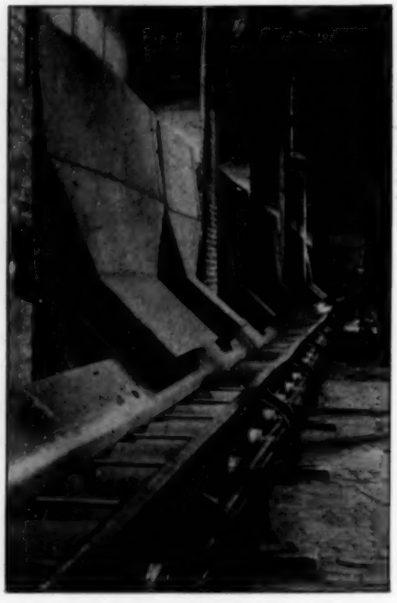

FIG. 4—STEEL GUARDS ON LOWER RUN OF CARRIER

A Typical Installation

A typical boiler house installation is shown in Fig. 3. The run-of-mine bituminous coal is discharged from railroad cars on the siding to the steel hopper suspended beneath the railroad tracks. From this point it is carried by means of an apron feeder to a crusher located directly over the pivoted-bucket carrier. The track hopper, measuring about 10 or 12 feet square in plan, is made up of steel plates about ¼-inch thick. The apron feed consists of two strands of steel chain with overlapping corrugated steel pans between, as shown in Fig. 6. This apron travels at a speed of about 10 feet per minute and

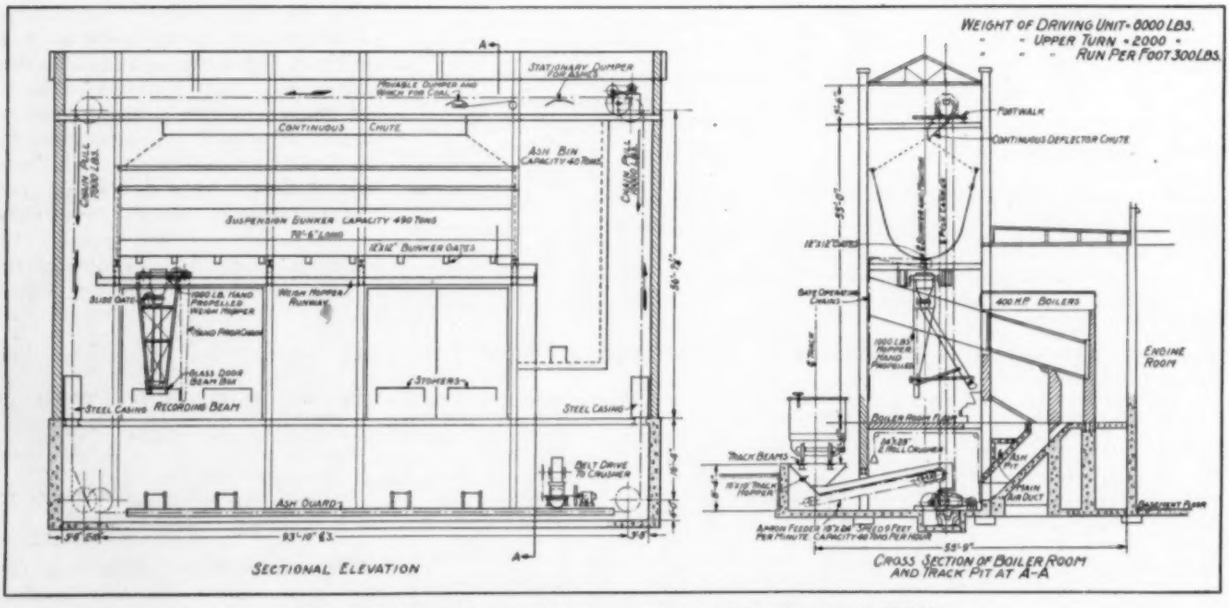

FIG. 3—LAYOUT OF TYPICAL BOILER HOUSE INSTALLATION

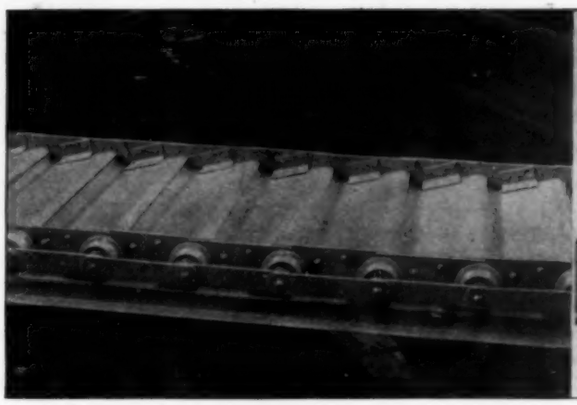

FIG. 6—CONSTRUCTION OF APRON FEED

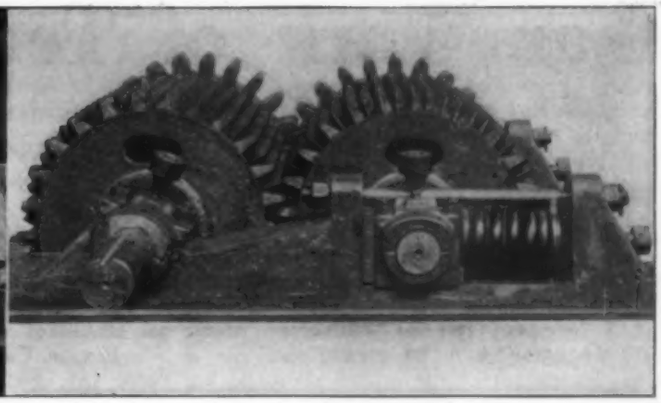

FIG. 9—COAL CRUSHER WITH COVER REMOVED

draws the coal from the hopper, feeding it uniformly to the crusher. The crusher, which is of the two-roll type, is illustrated with the cover removed in Fig. 9. It is equipped with relief springs on one roll shaft to permit the rolls to yield in case a piece of iron or other hard, foreign substance is delivered to the crusher with the coal. This crusher is designed to reduce run-of-mine coal to such a size that about 90 per cent of the product is suitable for stoker use.

Filling the Bunker

The coal from the crusher is delivered to the lower run of the pivoted-bucket carrier, and is then elevated and discharged to the suspended coal bunker overhead. Fig. 4 shows the lower run of the carrier equipped with wide steel guards which cover the chains, and at the same time insure delivery of the material into the center of the buckets without spilling. The driving unit is compact and very simple in design. Materials are discharged from the buckets as shown in Fig. 8. Each bucket is equipped with a cam on each side. These cams come in contact with a dumper which can be moved along the upper horizontal run to any point desired. This dumper is of such shape that the buckets are tilted and brought back to their original position without vibration or shock.

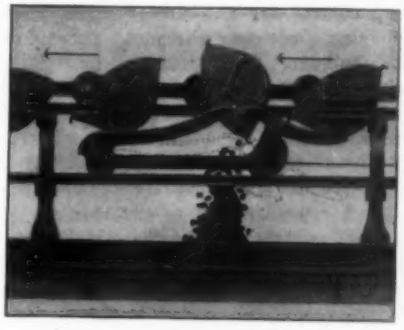

FIG. 8—DIAGRAM OF BUCKET DISCHARGE

FIG. 7—VERTICAL RUN ENCLOSED IN STEEL CASING

The carrier chains run in a confined path between T rails on the vertical run, and are usually encased in a solid steel casing for the entire height, as shown in Fig. 7. The coal is drawn from the suspended coal bunker through gates and delivered to a hand-propelled traveling weigh hopper of 1000 pounds capacity. This is equipped with a weigh scale, and a ticket recording beam which may be seen in Fig. 10. The beam being enclosed in a box with a glass door is so located that it can be manipulated by the attendant standing on the boiler room floor. This traveling hopper receives the coal from any opening of the suspended coal bin, and delivers it to any boiler.

As all the coal used is weighed, an accurate record of the performance of any boiler may be kept.

The ashes from the boilers are allowed to accumulate in the pits below the stoker grates, and at intervals are hoed from the pit to the lower run of the carrier. The ashes are then taken up overhead and discharged to the ash bin where they are delivered through the ash chute to cars on the railroad siding.

One man and a helper can handle all the coal and ashes for a good sige plant.

The American Radiator Co., Chicago, has commenced work on the construction of a new steel foundry at Buffalo, where it will be operated in connection with the company's malleable foundry. The contract for the building, which will be 120 x 200 feet, has already been let. The plant will be equipped with two 6-ton Greaves-Etchells electric furnaces.

FIG. 10—WEIGH SCALE AND RECORDING BEAM

War Work of Technical Societies

What the Nation's Scientists and Engineers Are Doing to Help Win the War —Varied Activities of Technical Organizations Extend to All Phases of Army and Navy Preparedness

BY CALVIN W. RICE

WAR is a science; in fact, it is one of the most complex of sciences. This has been recognized for ages, but in the present war it has become particularly evident. War in the air, war under the sea, war by means of novel surface machines, bombs and gases have all added to the complexity of the science.

War has become a matter of complete military and economic organization, into which every man, woman and child must be massed. In this complete organization the technical men play not a small part, and it is, therefore, but natural that the several technical societies representing them should be active as such in the war period. It is, however, with no thought of taking peculiar credit that the following activities of the technical organizations are enumerated—it is realized that at this time the nation places dependence on everyone, no matter what his talent or connections.

During the Civil war in 1863 the National Academy of Sciences was formed and congress gave it a charter to advise the government in all technical matters. Last year the academy again offered its services, and the President of the United States officially received them in September, 1916. President Wilson invited the president of the academy at that time to form what is known as the national research council.

The council is a body of about 40 men, members of technical societies, who have in turn arranged themselves into numerous committees to study all realms of research. The following is part of a statement kindly prepared by the vice chairman of the work of the council to date, condensed with difficulty on account of the great variety and scope of its activities.

National Research Council Activities

All the work of the national research council that touches upon army and navy problems is carried on with the advice, co-operation or control, as the case may be, of the representatives of the various departments of the army or navy under which such work falls.

The council has co-operated in the establishment and organization of the submarine experimental work at Nahant, Mass.; has established a submarine station at New London, Conn., and another at San Pedro, Cal., and has been instrumental in the organization of groups working at New York, Chicago and Madison, Wis. A great practical advance in the art of submarine detection has resulted which cannot at the present time be explained.

Problems Distributed

The physics committee of the council has distributed to various groups 20 or more large problems in physics, some of which have already been solved. Among the latter are the location of aircraft by sound, the development of fire control for anti-aircraft guns, telephoning between airplanes, protection of balloons from ignition by static charges, and development of new and improved methods of measuring muzzle velocities.

The chief officer of the signal corps of the army has asked the national research council to act as the division of science and research of the signal corps, and in this capacity the council has organized a sound-ranging service in the signal corps, and a new meteorological service in the same corps, and is now drawing specifications for scientific instruments to be used on airplanes. It has sent a dozen of the best physicists in the country to France to aid the American expeditionary forces with their scientific knowledge, and is selecting a personnel of several hundred men who are to be engaged in the scientific services of the army and navy.

The chemistry committee has perfected an elaborate organization for handling all the chemical problems which arise in the army and navy, and it has distributed some 150 chemical problems which are being attacked in the chemical laboratories of the country.

The engineering committee has contributed in no small degree to the development of devices for the protection of ships from submarines. It has organized a large group which is now working on the development of steel protective devices for use of the soldiers at the front. Through co-operation with the national advisory committee for aeronautics it has carried on extensive and important researches in the development of airplanes and airplane engines.

The nitrate committee has made an elaborate study and report which has been made the basis for the expenditure by the government of large sums of money upon the erection of a nitrate plant and upon kindred projects.

The gas warfare committee has had for six months 120 chemists working on the problems of gas warfare, and the results already obtained have been of the utmost importance—so important that the army and navy have placed large appropriations at the disposal of this committee for its researches.

The optical glass committee, by taking from research laboratories like the geophysical laboratory a dozen or more silicate chemists and putting them directly in the works of the Bausch & Lomb Co. and the Pittsburgh Plate Glass Co., has in six months' time developed in America the production of optical glass from nothing up to 20,000 pounds a month, and in two months more this figure will have been multiplied two or threefold.

The foreign service committee, which the council sent abroad at once upon the outbreak of the war, was wholly responsible for the sending back to this country of French, English and Italian scientific missions, which brought with them the contributions which science had made to the war, both in the matter of instruments and methods, and unquestionably saved months of time in putting the United States abreast of the European situation.

Engineering Foundation Donates Its Income

Shortly before the declaration of war by the United States, the American Society of Civil Engineers, The American Society of Mechanical Engineers, the American Institute of Mining Engineers and the American Institute of Electrical Engineers were developing co-operative relations with the National Academy of Sciences through the Engineering Foundation, this latter being a group of men representing the above societies in the administration of funds devoted to the service of man through the instrumentality of the engineer.

In October, 1915, secretary of the navy Daniels invited 12 engineering and technical societies to nominate two men each

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Abstract of address delivered at a recent meeting of the Southern Commercial Congress, New York. The author, Calvin W. Rice, is secretary, American Society of Mechanical Engineers, New York.

whom he might appoint on the naval consulting board. The societies responding were the four previously mentioned and the American Chemical society. American Mathematical society, American Aeronautical society, Inventor's guild, Society of Automotive Engineers, American Society of Aeronautical Engineering, American Institute of Metals and the American Electrochemical society.

You are all familiar with the great industrial census directed by the committee on industrial preparedness, a subcommittee of the naval consulting board, whereby all industries in the United States doing an annual business in excess of $100,000 were listed, together with all pertinent information as to their capacity, number of workmen, location with respect to sources of materials, transportation, etc. These data have all been collated on cards similar to those used in the United States census.

Committees in each of the 48 states, the territories, and the District of Columbia were formed by the following five Societies: American Society of Civil Engineers, American Institute of Mining Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers and the American Chemical society. Much if not all the undertaking was without expense to the government.

A first essential to all work to be done by the people generally must be publicity. To explain and popularize this census President Wilson wrote a letter inviting the above five societies to undertake the work, and the Associated Advertising Clubs of the World raised donations approaching $1,000,000 of advertising space throughout the press of the United States to display the President's letter and explain the census

Examine 200 Inventions a Day

In the matter of inventions alone the naval consulting board is receiving in excess of 200 propositions a day which require for disposition the continuous voluntary services of a large number of the members of the technical societies.

All these voluntary activities of the people of the nation were consummated in the establishment of the H. R. 16,460, in July, 1916, of the council of national defense composed of six members of the cabinet and advisory commission of seven civilians. The advisory commission has numerous committees with which the public is now familiar. The principal ones, however, of war industries and air craft, are headed by men originally designated by the technical societies as their representatives in some war work.

Early in the war the Engineers' club of New York formed a military engineering committee with the object of arousing the people to the necessity of preparedness and to instruct them in military tactics. The same committee later supervised and financed the recruiting of a division of engineers for France

Automotive Engineers Perform Splendid Service

The Society of Automotive Engineers has furnished some of the most valuable volunteer men now in the departments of the council of national defense and has undertaken standardization of aircraft production. The engineers who designed the wonderful liberty motor are members of the Society of Automotive Engineers.

This Society is also prominently represented on the automotive transport section of the war industries board.

The American Museum of Safety has been co-operating with the government to conserve the lives and health of workers in federal industries and recently completed a safety survey of federal plants. As the result of this survey the government placed an experienced safety engineer in each navy yard and arsenal, and a central safety committee has been organized in Washington for directing the government's accident-prevention work.

The director of the museum has been appointed chief safety expert of United States employes' compensation commission. The trustees have released the director of the museum to serve without cost to the government as advisory safety engineer. Two of the 13 safety engineers appointed by U. S. employes' compensation commission were selected from the staff of the museum.

The American Chemical society, in addition to participation in the research council and the naval consulting board, has co-operated with the American Institute of Mining Engineers and the U. S. bureau of mines in the preparation of a census of chemists, metallurgists and mining engineers, for which there is a great demand.

The society was prominent in the movement to protect the needs of the government for scientific and industrial work in the matter of platinum supplies. An arrangement has been made whereby drafted chemists shall be assigned to their special work, for which the government is in great need.

The Engineering council, representing the civil engineers, mining engineers, mechanical engineers and electrical engineers, has a war committee of technical societies and also the American Engineering Service committee. This last has collected already the classification data of several thousand professional engineers, and is continually extending its lists, and eventually plans to have catalogued 110,000 professional engineers and technical men.

This committee for months has been supplying all departments of the government and the industries generally with the names and abilities of specialists in all lines. The service is entirely free and any department of the government or any industry needing professional engineers may apply at the Engineering societies building, 29 W. Thirty-ninth street, New York, and service will be enthusiastically rendered.

In addition to the co-operation in the joint activities already mentioned, The American Society of Mechanical Engineers has committees studying the certification of gages, in an effort to ensure uniform production throughout the United States. The successful solution of this problem will demand the greatest co-operation and attention.

The American Engineering Standards committee, representative of several of the societies already mentioned, is assisting in an international as well as national service of standardization of all kinds, both for the period of the war and afterwards.

Work of Other Societies

The American Railway Engineers' association has published and distributed a manual of recommended practice to all the members of the railway regiments in France.

The National Machine Tool Builders' association has co-operated with the council of national defense and the aircraft production board in the production of the new liberty motor. A comprehensive list of all the machine tools in the United States ready for delivery was prepared and furnished the government.

The National Electric Light association, The Association of Edison Illuminating companies, The American Gas institute, assisted also by the American Water Works association, the Illuminating Engineering society and the American Society of Refrigerating Engineers have for months maintained an office and staff in Washington and have undertaken a comprehensive service for gas and electricity to the various cantonments regardless of commercial considerations on the one hand, and on the other have been the clearing house to assist municipalities and aid utility companies to secure the coal necessary for their operation.

The American Institute of Metals has co-operated with the U. S. bureau of standards in the preparation and inspection of nonferrous metals and has furnished many men for the engineer officers' reserve corps.

The American Institute of Architects is handling certain emergency work for the government through its committees

appointed by the president of the institute. A war-service register has been created, comprising over 3000 names, giving qualifications of architects and draftsmen. This register has been actively used by various branches of the government service.

The Illuminating Engineering society has laid out the lighting schemes for the aviation cantonments for flying by night, an absolutely new problem. The society has also prepared industrial lighting codes for the welfare section of the labor commission of the council of defense. It is also at work on some confidential matters.

The society for the Promotion of Engineering Education has prepared in detail modifications of curricula for students in engineering to meet war conditions, and has worked out a just modification of the draft law so that students who have been drafted may be assigned to finish courses which will specifically prepare them for government service. Special information has been furnished the departments of the government, including lists of all books on the application of engineering to the war.

The National Society for Promotion of Industrial Education has trained several hundred electricians for the navy in connection with the electrical school of the New York navy yard; it has also done similarly for the signal corps and is now training men for marine service.

The Franklin Institute up to date has recruited 721 men for the aviation service. Its secretary is a major on Gen. Pershing's staff and the associate secretary is a lieutenant in the signal corps. Investigations have also been made by the Institute for the national research council.

The National Association of Engine and Boat Manufacturers has turned over to the government complete inventories of the members' factories and equipment in order to facilitate the work of the council of national defense. Practically all of the submarine chasers ordered have been built in the factories of the members of the association. Recently an arrangement has been effected with the Society of Automotive Engineers whereby the members of the association have become represented in that organization with particular reference to the formation of a new committee on marine standards, whose work will undoubtedly prove of immeasurable assistance to the government.

The American Electric Railway association has a committee with representatives in the several military departments of the government, who in co-operation with the council of national defense are preparing a comprehensive map of all the electric railways and their availability for war.

The technical societies have demonstrated their willingness to consecrate every ability to make the stars and stripes the symbol of that nation whose citizens are capable of the greatest sacrifice and unselfish service to mankind.

How Best to Analyze Labor Turnover

BY RICHARD B. GREGG

THE study of labor turnover is the measurement of the movement of industrial workers in and out of their employment, and the analysis of its causes and results. The value of such study is patent to everyone who has ever handled employment. The difficulty of training a continually shifting force, the low quality and quantity of production obtainable from tramp workers, the lack of team play, low standards, poor tone, discontent and unrest in an establishment where the labor turnover is high—all these are factors that gravely affect both the annual balance and the ease and effectiveness of management.

There is, of course, a certain amount of labor turnover which is unavoidable and normal. The factory will always be losing people from old age, death not caused by industrial accident or occupational disease, marriage, changes of residence or domestic events wholly uninfluenced by the character of work or pay. What this normal amount will be will vary from factory to factory according to local conditions. A careful estimate in one instance placed it at 21 per cent of the total working force. The amount of turnover in excess of this normal, excepting layoffs due to slackening demand for product, may be considered a kind of barometer of dissatisfaction, either of employer with employe, or of employe with position. The quittings are in effect a sort of gradual continuous strike.

Let us imagine a factory where there is a high labor turnover, with all its consequent difficulties. What would it mean to apply scientific methods to this problem, and what would be the probable results? First of all, we must get the facts. How great is the labor turnover? To get this we must examine the payroll or keep a record of the hirings and quittings and discharges from the entire factory for a given period of time—say a year. By comparing the total number of "leavers" for all reasons with the total normal number of workers in the factory we may obtain the turnover in terms of percentage, which is useful for comparisons with other periods or other groups of workers. For purposes of thorough analysis it will be well to obtain the amount and percentage of turnover for each department and each position with the department. In one factory the annual turnover for the entire concern for several successive years was in the region of 45 per cent. Again, in one department in a cotton mill the turnover last year was over 500 per cent. The turnover in some positions will occasionally run much higher than that.

Having obtained the annual turnover *in toto* and in detail in this fashion, we will get further light on the situation by working out the turnover for each week and for other divisions of the year such as each of the thirteen 4-week periods. In this way we learn whether there are any seasonal or periodic fluctuations. In some industries, such as the building trades or the manufacture of clothing, such variations are very marked.

It is obvious that these measurements and analyses tend to make it more possible to learn the causes for the turnover. Once we learn real causes and definitely locate responsibilities we are in a position to begin to control the phenomenon.

Carrying out our analysis and arrangement of facts still further, we can often obtain very valuable indices of the reasons for high labor turnover. For instance, grouping the "leavers" according to their actual earnings will show the significance of the wage factor as a cause for leaving. To illustrate how this works out: A certain cotton mill learned that there was a high labor turnover in its power department. Upon further analysis the turnover was found to be confined almost entirely to the coal handlers. Inquiry showed that these men were receiving 50 cents a week less than the coal handlers at the local railroad station. The wage was raised 50 cents, the turnover ceased, and the management was relieved of its worry about demurrage charges. Usually a large part of the shifting will be found in the low-paid groups. The results of most experiments with this fact seem

Abstract of a paper to be read at the annual meeting of the American Society of Mechanical Engineers, New York, Dec. 4-7.

to show that low wages are much more the cause of the high turnover than any inherent and unchangeable characteristics of that group of workers.

Other groupings that might prove significant are sex, nationality, age, foremen, rooms, heaviness of work, amount of illumination or ventilation of work place, dirtiness of job, method of pay, amount of accident risk, anxiety, amount of other fatigue factors, distance of workers' homes, etc. A further aid in learning the causes for leaving is making inquiries from the "leavers" before they go and from the foremen.

As a result of all this recording of facts, measuring, weighing, testing, analysis and classification, we find ourselves able to determine the real causes for the turnover in a large number of cases. Sometimes the causes will be simple, as in the case of a motor company that learned that most of its leavers had resided a considerable distance away from the plant. By giving preference to applicants living nearby the turnover was gradually very greatly reduced. Usually, however, there is a complex set of causes, and the apparent cause merely serves to release discontent that has gradually been accumulating for a number of reasons. With patience and skill we can usually arrive near to the truth. By further measurement and analysis we can determine, or at least approximate, the cost of losing a worker in a particular position and training another. These costs may be roughly divided into overhead costs and operating costs.

Among the overhead costs there are more rapid depreciation of machinery because of ignorance or lack of skill of new workers and extra floor space and extra machines to provide against idleness of a certain amount of machinery due to shifting labor.

Operating costs may include any or all of the following:

Time of increased superintendence or office work: time spent by foremen or superintendent in discharging a workman where that is the way the vacancy occurred, time spent by foremen or other workers in training the new employe and time spent by clerks on additional payroll or other records.

Machine costs, covering: time machinery is idle when a new worker cannot be obtained immediately, idle machinery for temporary stoppages due to ignorance or lack of skill of new worker and repairs to machines or renewals of tools broken for the same reason.

Material costs, including waste or damaged material due to ighorance or lack of skill of the new worker difficulties in subsequent processes due to poor work by new employes in previous processes and lower production while new employe is working up his best skill.

Additional accident cost due to higher rate of accidents among new employes.

Turnover Loss is Severe

These two kinds of overhead costs and four groups of operating costs, while not exhaustive, serve to illustrate the method of observation, recording, measurement and analysis which is just as helpful in this aspect of the matter as elsewhere. With knowledge so obtained the factory manager is in position to estimate more truly the importance of this problem and to judge whether he can afford to take certain steps to reduce this turnover.

As is probably well known, those who have made the most careful studies of this question find that it costs about $10 to replace an ordinary laborer, and as much as $300, and perhaps more, to replace skilled workers. The cost varies, of course, with the nature of the position. The total losses are unquestionably enormous. Magnus Alexander in his well-known study, it may be remembered, estimated the losses in a group of 12 metal-working factories in a single year at not less than $831,000; and one textile mill, employing about 2000 workers, may be mentioned which is losing at least $20,000 annually from its high labor turnover. Other instances could be multiplied.

It should be remembered, moreover, that none of these estimates includes the losses to the employes or the community. What frequent job shifting means to the employe and his family in terms of frequent house moving, ill-feeling, discouragement, bitterness, decrease of skill, lowering of pride and self-respect, we have no means of measuring.

There are many other aspects of the matter that still remain to be explored. What are the relations between absences and tardiness and labor turnover? Cannot absences and tardiness be studied in the same way as labor turnover? What are to be the relations of labor-turnover control to such problems as trade education, promotion policies, the intellectual life of the industrial community, the mobility of labor, scientific management, women in industry? Will it be wiser to leave the broad problem of control of labor turnover entirely in the hands of employers, or should the state have a voice in the control? These are questions both of the present and of the future. In thinking about them and working over them it is important to bear in mind the value of scientific method. The discovery of a unit of measurement, a method of measurement, analysis and classification, has made possible great advances in this one small part of the labor problem. Let us obtain the facts in the labor situation,—all of them. Just as Darwin always recorded all facts which tended to contradict his hypotheses, because he knew that unless he did so he would be apt to overlook those facts in order to make his hypotheses triumph, let us also recognize the presence of personal and business interests and bias in ourselves as well as in others. Let us never dodge or shirk the facts. Let us record them so that we and others can study them at any time. Let us measure when means of measurement are obtainable. Let us analyze, weigh, test, and fearlessly experiment. Let us invoke our finest constructive imagination in making our hypotheses. Let us not be dogmatic but humble with our theories, ready to throw them away when new facts are recognized.

Let us last of all never overlook the human instincts. They lie at the heart of our problem. Because of much past neglect in the handling of this question they require the greater emphasis.

It is unquestionably a trait that every person wants to have some sort of control of the circumstances and direction of his own life and of his work as a part of his life. For this reason I believe not only in scientific method and spirit, but I also believe that science must join hands with democracy in order to reach any sound solution of the greatest of all our problems. To find the methods and forms of organization through which such a solution may be obtained is the task that lies ahead of us.

Shepard Announces Course

An interesting bulletin has been published by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., announcing the 1917-18 courses for the Shepard technical night school. The Shepard company inaugurated its system of evening training for employes about a year ago to enable them to obtain a more comprehensive insight into blueprint reading, shop mechanics, drawing and mathematics and practical electricity. In conjunction with the study course the company has arranged for a series of lectures on technical subjects.

A handsome booklet has been published by the Wright Wire Co., Worcester, Mass., devoted to the organization of that company. Photographs of all the executives, salesmen and heads of departments are reproduced as well as views of departments, equipment, character of work done, and finished products. Other sections of the booklet are devoted to social and welfare work performed by the company.

Improved Engineering Laboratories

Massachusetts Institute of Technology Equipped with New Laboratories to Render Greater Service to the Metallurgical and Electro-Chemical Industries of the United States

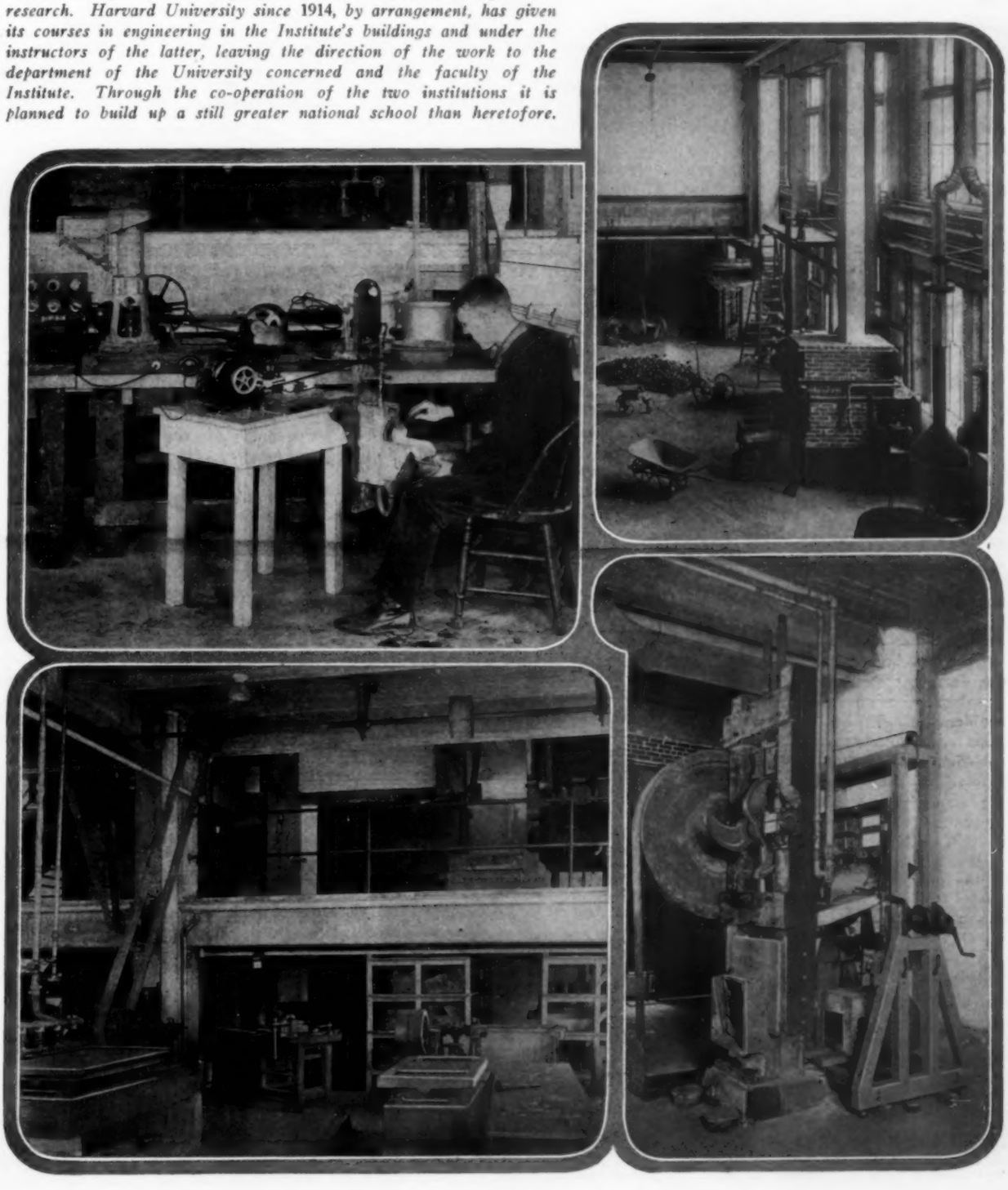
FOUNDED in 1861 as a school of industrial science through the efforts of W. B. Rogers, the Massachusetts Institute of Technology has removed to its new location on the Charles river basin, Cambridge, where a group of buildings has been built on the Institute's 50-acre site. Illustrations showing the main building and interior views of a few of the laboratories appear on this and the facing pages. Below and to the left are two views of the mechanical engineering laboratory; the former showing a part of the lathe equipment, the latter, a corner of the forge shop. At the left and near the middle of the page the electrochemistry laboratory is illustrated. Below is a general view of the main building from the Charles river. On the opposite page, at the top and to the right a cupola in the mechanical engineering laboratory is shown; to the left a small working model of flotation apparatus; to the left and at the bottom of the page, a glimpse of the ore dressing laboratory and to the right one of the stamp mills used in experimental mining

Indicate Modern Educational Trend

work. The Pratt school of naval architecture has not yet been started, but funds for its construction and maintenance have been obtained.

Sixteen distinct courses are offered by the Institute in engineering and scientific work. Each course is of four years' duration and leads to the degree of bachelor of science. Post graduate work is encouraged. The Institute was among the pioneer technical schools to take cognizance of aeronautical engineering, several years ago, when it established a course in this branch of engineering and simultaneously built and equipped a laboratory for aerodynamical research. Harvard University since 1914, by arrangement, has given its courses in engineering in the Institute's buildings and under the instructors of the latter, leaving the direction of the work to the department of the University concerned and the faculty of the Institute. Through the co-operation of the two institutions it is planned to build up a still greater national school than heretofore.

Facilities for Investigating Problems in Mining, Mechanical and Metallurgical Subjects Feature Engineering Departments in Boston Institution's Recently Erected Buildings



Safety Psychology in Sheet Mills

Although Mechanical Guards Are Effective in Reducing Sheet Mill Accidents, the Ultimate Maximum Reduction of Hazard is Dependent Largely Upon the Mental Attitude of the Workers

BY J. M. WOLTZ

THERE is a certain proportion of accidents that are not preventable by mechanical safeguards. Just what this is, is disputed, and we need not enter into this phase of the subject. Undoubtedly if mechanical safeguarding was not carried to the extent it is, there would be a great many more accidents than there are, so that even though this very important part of safety work has not produced the results some over-enthusiastic persons predicted, it should not be lightly treated, nor considered of little worth. No matter how well guarded a machine may be, someone can find a way to become injured by it, even though it may be necessary to take off a securely fastened guard to do so.

Role of Safety Committees

Safety committees have a very important part in any safety work. It is largely through your committees that you hope to scatter the seeds that will later develop into ideas, actions and results, and will sooner or later help, with the other safety activities, in reducing the accident frequency in your plants. Of what material these committees are to be, their length of service, etc., it is thought that local conditions must largely govern, and it is because of this fact that the value of the educational feature of safety work is so problematic. Efforts which produce good results in one plant may have no effect in another. Whether this be due to the personal equation of the safety man at the head of the movement, or to some peculiar kink in the make-up of the workers in various plants, it is hard to say.

Slogans are useful in the educational work, for you must have something to talk up to that is capable of attracting the eye and ear of the fellow you want to interest in your work. Bulletins are a valuable aid in your educational attack, because of the many different ways they present to get the various features, new arguments, good and bad examples to each individual, whether he can read or not. The psychology of accidents is one of the many phases of the work that has not had the careful consideration and study it deserves. Herein lies the gateway to many of the mysteries of accident prevention that are as yet a closed book to those who have entered upon the work with the idea that it was a simple matter, only requiring a brief consideration of problems that were open to all.

The previous speaker has shown that the mechanics of the sheet mill are simple, and problems of safeguarding, so far as the machinery itself is concerned, do not require a great concentration of effort or time. So far as our experience goes, the greatest danger that confronted our workers before the safety movement had progressed appreciably, was from breaking of coupling boxes, especially those nearest the engine where the greatest strain is experienced. This danger is greatest during cold weather, but is present at all times, and may be largely eliminated by banding each box with soft iron bands of material ½ x 3 inches. In case of breakage, these bands tend to prevent the pieces from flying about the mill.

Another hazard is that of kicking screws, the long spanner bar swings around, often hitting the man who is engaged in turning the screw down. The catcher is also hit by the spanner at times. These accidents can largely be reduced by using kerosene or benzine on the screws before starting up on a cold mill. Also it is well to require the operators on a mill to stand back a safe distance until a trial bar has been passed through the rolls.

What are the greatest hazards in sheet mill practice? Our records, shown in the accompanying table, cover a period of two and a half years. We hope for the purpose of accuracy, and to enable us all to present figures that have the same value and are understandable, that the National Council will soon adopt some standard scheme of accident values and records. The table takes into consideration, with two exceptions, only such anatomical parts as show 50 or more reported accidents. The majority of the eye cases were not serious and did not result in any lost time. As a rule, if an eye case was serious enough to be off at all, several days were lost.

The fingers show the highest percentage of injuries and these are divided into cuts, bruises, burns and crushes. The forearm is next on the list, with cuts, burns and bruises as the predominating causes. While cramps can hardly be classed as accidents, they are one of the serious hazards of sheet mill operations. The writer believes that if sheet mill employes can be made to see the need of right care of the body, the use of proper food and drink, the cramp problem will be well on its way to solution.

Something About Cramps

Drinking water of the right temperature has a marked bearing on the frequency of cramp cases, but our observations do not indicate that it has any effect upon their severity. No month of the year appears to be free of cramps, but needless to say, the hot months show by far the greater number. It will be noted there is a marked reduction in cramp cases in 1916 over 1915. While this was to be expected, owing to a reduced operating force in the sheet mills in 1916, the percentage of reduction is greatly in excess of what one would expect from this cause.

Various experiments were made in an attempt to cut down on cramp cases, and finally we installed in the standing on the catcher side of each pair of rolls, a set of grates over an opening that permits a stream of cool air, under low pressure, to flow continuously upward. This has proved to be a wonderful help in reducing cramps. Another thing that has helped to lower the number of cramp cases has been the examination of applicants for employment by the medical department, preventing the employment of men who are unable to stand the work.

Piling sheet bars and finished sheets too high is a serious hazard that is very easy to correct. The handling and transportation of sheets and sheet bars also presented some difficult problems, but with the introduction of improved cradles or hooks for crane operations, and the tractor for trucks,

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Discussion of "Safe Practices in Sheet Mills," by Frank E. Morris, safety engineer, American Rolling Mill Co., Middletown, O. The author of this discussion, delivered at the National Safety Congress, New York, Sept. 13, is J. M. Woltz, safety director, Youngstown Sheet & Tube Co., Youngstown, O.

these hazards have been materially reduced. "Stickers" as yet, an unsolved problem with us, are hard to handle and account for many cuts and bruises.

We are installing a drinking water system for the entire mill; a separate unit will be devoted to the sheet mill. A change house is being built to care for the clothes of the sheet mill workers.

We are erecting hundreds of houses for our employes, both to rent and to sell. We have playgrounds for both young and old. We have cultivated hundreds of acres of ground to provide food at a reasonable cost to our employes. Our visiting nurses have in the past three years accomplished a great deal of good. Our medical service, while not free to our employes' families, is never refused when the wife or child calls at the hospital for advice or attention.

We endeavor to protect our employes against the crooked lawyer, fake doctor, and that vilest of humanity, the pseudo-Americanized foreigner, who preys upon the fears and ignorance of his fellow countrymen.

Analysis of Sheet Mill Accidents

Part	Number of Accidents 1915	1916	6 mo. of 1917	Number of Days Lost 1915	1916	6 mo. of 1917
Eye	983	524	225	95	159	63
Fingers	577	429	220	301	529	350
Forearm	231	150	54	228	169	103
Hand	116	102	43	78	183	22
Thumb	115	95	32	114	82	0
Wrist	113	71	35	90	142	16
Foot	59	51	34	99	229	265
Toe	54	44	17	222	255	16
Cramps	305	89	24	65	166	22
Back	18	24	12	319	208	33
Thigh	22	32	25	165	124	35

How France is Amplifying Its Steel Output

THE Paris chamber of commerce recently published a bulletin showing the stimulating effect which the war has had on the growth of mining and metal industries in France. This article, which is a general abstract of the bulletin, reproduces an interesting account of how one blast furnace plant was built up and made to attain a large production.

"Before the war, France was already considered by experts as the richest country of the world in iron ore, after the United States. Besides the basins of Lorraine, which produce 3,000,000,000 tons of ore, she possesses the basin of Normandy, which, in an area of 40,000 square kilometers, contains, according to a recent estimate, nearly a billion tons of a superior quality of ore yielding 50 per cent of iron. In 1914, 21 grants in mining districts, producing 1,152,000 tons a year, already existed in the departments of the Orne, Manche and Calvados, which yielded 648,000 tons with six grants only under exploitation. About the middle of 1916, a large society, entirely French, the Societe Normande de Metallurgie, was founded, with a capital of 40,000,000 francs, by Messrs. Schneider & Co., the great Creusot manufacturers, the Societe des Acieries de la Marine et Homecourt, and several shareholders belonging to the metallurgic world. This new society leased the foundries and fittings previously organized, or provided for, by the Societe des Hauts-Fourneaux de Caen, formed in 1892, and in July, 1916, started the works afresh now situated at Mondeville-Colombelle near Caen. About 30 kilometers distant is the Soumont mine, capable of yielding even now 4000 tons of iron ore a month, and which, in the near future will have a larger output.

The establishments of the Societe Normande de Metallurgie comprise gas and coke furnaces, large steel works, a flattening mill, smelting works and blast furnaces. Three stations, and a railway line 33 kilometers long, facilitate the transport service. The line was made by a branch society and runs between the above foundries and the Soumont mines. At present there are four batteries of 42 furnaces each, producing 1000 tons of coke a day. In January, 1918, two other batteries, now under construction, will be in working order, and will bring the output up to 1500 tons a day or 500,000 tons a year. The coke, collected by an ingenious system of inclined planes and chains, after being sorted out, is sent in trucks to government metal works. Gas undergoes a series of processes for the purpose of extracting the secondary products obtained by the distillation of coal such as tar, phenol, benzine, toluol, naphthalin, sulphate of ammonia, used in the manufacture of explosives and for dyeing purposes, and which, prior to the war, were almost exclusively produced by interests in Germany.

The blast furnaces, the first of which has been recently inaugurated, are in themselves 29 meters high, but with their base ments, tower 45 meters above the foundry ground plot. They can produce 400 tons a day, which is said to be the largest output obtained in Europe up to the present day. To each furnace is affixed a battery of five metal cylinders ,or "Cowpers," seven meters in diameter, for heating the air for the combustion of coke, and the reaction of carbon on the oxides of he ore, which is the source of production for cast iron. Three of these gigantic blast furnaces will be ready in the autumn of 1918, and the whole installation, when completed, will allow of an output of 450,000 tons of cast iron a year. The steel works, properly so-called, contain four converters of 30 tons, and five Martin furnaces of 30 tons, allowing of an output of 275,000 tons of Thomas steel and 125,000 tons of Martin steel every year.

The flattening mill can pass 500,000 tons of ingots a year, and is supplied with several reversible trains for the production of all small samples. The Societe already possesses stocks of iron ore sufficient to insure the supplies for its factories without any difficulty. It has had a large water tower, 66 meters in height, built in the neighborhood, with two reservoirs and a canal to the Orne, so that 10,000 cubic meters of water could be supplied hourly. A vast hall 200 meters long contains the electric machinery for distributing motive force, two turbo alternating generators of 3000 kilowatts, one of 5000, six gas alternating generators of 6000 horsepower, and three of 3000 horsepower. A private harbor has been built on the Orne canal, and it is now ready for vessels of 2000 tons, and will soon be open to boats of 8000 tons capacity.

The preceding facts show how the Societe Normande has been able to create in the midst of war one of the most important metallurgic centers in the whole of France. The mining industry of the entire region has followed its example. At present 30 fresh grants have been made for exploiting of the layers of iron in Normandy, Brittany and Anjou. On the other hand, the French government is preparing to work the Littry coal fields, situated between Saint-Lo and Bayeux. Lastly, owing to many recent improvements, trade with Caen harbor is increasing every day.

Oxy-Acetylene Welding and Cutting

Importance of Preheating the Castings Before Welding—Design and Operation of Welding and Cutting Torches—Necessity for Using High-Grade Welding Rods and Other Supplies

BY STUART PLUMLEY

IN CONSIDERING the subject of oxy-acetylene welding at prior conventions of the American Foundrymen's association, attention has been centered largely upon the various classes of work which have been accomplished with the process, and in generally describing the equipment and gases used. The process has now been employed so many years that practically everyone has a fair idea of it, and generally understands the equipment and the things it will do.

Believe Welding Makes Brittle Union

There is, however, an unfortunate condition existing, especially in the New England states, which is brought about by a lack of practical knowledge of the process, and, in particular, a lack of knowledge of the metallurgy of iron and steel, as it affects a weld. Among some of the foundries and machine shops in this district, the impression seems to have gained ground that the process produces only a hard, brittle union of the two parts to be welded, and that the weld cannot be machined; also that a weld in cast iron has no particular strength. Nothing could be further from the truth than this impression. It has been brought about by a lack of study of the process, by the use of very poor filling rods, and especially by the use of a great variety of apparatus, with which the market has been flooded which is improperly designed and constructed, and which is directly responsible for failures.

Under these conditions it seems opportune at this convention to consider the process, as applied to foundry work from a more scientific standpoint and with a better understanding of the various features of the aparatus and its use, which bring about success in welding. These various factors cannot be given too much consideration. It is upon them that the success of the process in each individual foundry is dependent.

Iron castings should be carefully prepared for welding, and placed in such a manner that preheating may be accomplished without unnecessary handling. This preparation consists in cutting away the edges to be welded to an angle of 45 degrees on each side, to permit the operator to start welding at the bottom of the broken section. As it is necessary to bring the temperature of the casting up to the point of maximum expansion very slowly and evenly, and as it is desirable to maintain this heat as nearly constant as possible during welding, it is usually best to place the casting in a rough brick enclosure, so the heat may be properly confined.

Methods of Preheating

Preheating should be accomplished either with a large oil or gas flame of moderate temperature, or with charcoal. A fuel oil, or kerosene oil burner, is perhaps the most convenient means for preheating. Two such burners operating through openings in the brick wall previously mentioned will usually heat a casting evenly, without overheating any particular part. During welding, these preheating burners

The author, Stuart Plumley, of the Davis-Bournonville Co., Jersey City, N. J., presented this paper at the Boston meeting of the American Foundrymen's Association, Sept. 24-28, 1917.

Welding Required to Repair Damaged Cylinders of Two Interned German Steamships

First Vessel

Welding crack about 19½ inches long in starboard low pressure cylinder liner.

Welding crack about 27½ inches long in port low pressure cylinder liner.

Welding four broken places each about 8 inches long on end of liners, two on port low pressure cylinder, one on port second intermediate pressure cylinder, and one on starboard second intermediate pressure cylinder.

Welding crack about 12 inches long in cylinder liner of starboard second intermediate pressure cylinder.

Welding about 33 inches on port high pressure cylinder.

Building up about 18 inches on patch on port first intermediate pressure cylinder.

Welding patch about 53 inches on port first intermediate pressure cylinder.

Welding patch about 46 inches on port second intermediate pressure cylinder.

Welding patch about 73 inches on starboard low pressure cylinder.

Welding patch about 73 inches on starboard second intermediate pressure cylinder.

Welding patch about 80 inches on port low pressure cylinder.

Second Vessel

Welding two broken places on flange of elbow about 9 x 3 inches.

Welding flange about 57 x 4 inches on starboard intermediate pressure cylinder.

Welding slide valve of steam chest, 9 x 4 inches on starboard intermediate pressure cylinder.

Welding crack about 12 inches in bushing of starboard second intermediate pressure cylinder.

Welding two pieces on end of flange about 13 x 5 inches on starboard second intermediate pressure cylinder.

Welding patch about 8 x 6 inches on cylinder liner, starboard second intermediate pressure cylinder.

Welding patch about 32 inches in starboard second intermediate pressure cylinder.

Welding patch about 32 inches in starboard high pressure cylinder.

Welding flange about 39 inches on starboard high pressure cylinder.

Welding piece about 7 inches long in steam chest valve of cylinder liner, starboard second intermediate pressure cylinder.

Welding patch about 54 inches on port second intermediate pressure cylinder.

Welding flange about 36 inches on port second intermediate pressure cylinder.

Welding flange about 48 inches on port high pressure cylinder.

FIG. 1—A MORE DETAILED VIEW OF THE WELDED LEG

may be shut off, if the heat is found to be too great for the operator, and, when the weld has been finished, they may be relighted and the casting again brought up to an even heat. It should then be completely covered with asbestos, heated slacked lime, hot ashes or sand, and allowed to cool very slowly. This slow cooling tends to prevent the carbon in the iron from taking the form of combined carbon, which renders the casting hard and brittle.

There are two objects in preheating. The first is to bring the temperature of the casting up to the point where welding may be accomplished with an inexpensive fuel and with a flame or flames which are large enough to heat a large part of, or the whole casting. In this way a good deal of expense is saved, because almost any fuel, like kerosene, fuel oil, or charcoal, costs considerably less and does the work better than oxygen and acetylene. In some instances where the castings are large it would be impossible to bring the casting up to a welding heat with the oxy-acetylene torch alone. Second, kerosene or fuel oil torches, or charcoal are used to heat the casting prior to welding so that it will expand and not crack or be strained on cooling. Such preheating is always necessary where the casting is complicated or where there are several members, in which the movement of expansion and contraction would be restricted. If these members are not expanded, either in part or whole, before welding, contraction after the weld has been accomplished will set up strains in some of the members, eventually if not immediately, in this manner causing a break.

Care must always be taken, however, in preheating a casting to see that it is not heated so hot it will be warped out of shape. This is especially the case where there are machined surfaces, which must be kept true. Preheating should always be accomplished very slowly so that sudden temperature changes and stresses will not be produced. Slow heating is essential especially when the casting is a combination of thin and heavy parts. Cooling in all instances, as stated above, should be accomplished as slowly as possible.

In the first instance, where the casting is large and heavy and has been heated merely to save gas, the temperature to which this preheating may be carried makes very little difference, because this temperature will not ultimately affect the utility of the casting. If desired, it may be heated to a dull red heat. In the second instance, where the casting is complicated, or where there are machined surfaces, which must not be warped out of shape, the temperature of preheating must not be anything like as high as a dull red; but it must be sufficient to expand the metal properly so that, when contraction takes place, it will not create a strain or break. Definite rules for preheating are practically out of the question, because in each instance individual conditions govern the method.

In order to produce a proper weld in iron and steel, it is essential that the torch be so constructed that it delivers the two gases, oxygen and acetylene, in proper proportions, and that it thoroughly and intimately mixes these gases. In every oxy-acetylene torch, the two gases are brought together in some manner, the object being to produce a luminous cone of flame at the tip of the torch. If there is just enough acetylene, thoroughly mixed with the right quantity of oxygen, to produce complete combustion there will be, in the first reaction of the flame, no unconsumed oxygen or acetylene coming in contact with the weld, and the flame will produce satisfactory results. But if there is an excess of oxygen, which cannot be consumed in the first reaction

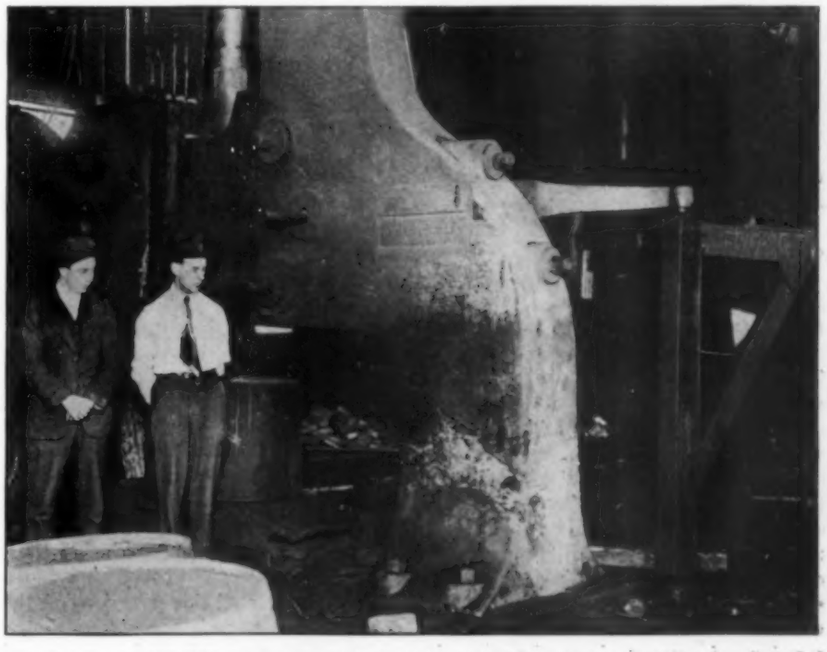

FIG. 2—A CLOSE-UP VIEW OF THE WELD IMMEDIATELY AFTER THE JOB WAS COMPLETE

of the flame, this excess of oxygen of necessity plays upon the heated metal during the welding operation and hence oxidizes or burns the metal. If there is an excess of acetylene instead of oxygen, the effect will, perhaps, be less harmful; but the increased amount of carbon, which will be taken up by the metal tends to make the weld hard and brittle.

Before proceeding further with this discussion, it may be well to explain that in the oxy-acetylene torch we are consuming oxygen and essentially gaseous carbon. Acetylene contains approximately 93 per cent carbon, the remainder being hydrogen, with the complete combustion of the oxygen and acetylene delivered by a properly designed welding torch that makes it possible to produce efficient welds.

The opinion seems to have become more or less prevalent in New England, with which the writer is specially familiar, that it is only necessary to lead the two gases together and to control them with two regulating valves in order to produce the required neutral flame. But, a great deal of experience has shown that this is not a fact. The two gases will not mix together intimately when brought into contact and passed through a channel. There must be some other means for mixing them be each independent of the other, else the proportion would be out of control.

A torch constructed upon the foregoing principles is illustrated in Fig. 3. The oxygen is led to the cast head of the torch through the upper tube under a pressure definitely controlled by the oxygen regulator. The acetylene is led to the cast head of the torch through the lower tube, the pressure being controlled by the acetylene regulator.

The interchangeable tips fit into the receptacle provided in the cast head of the torch by means of a ground joint, and each tip is arranged to produce a different size of flame for use upon

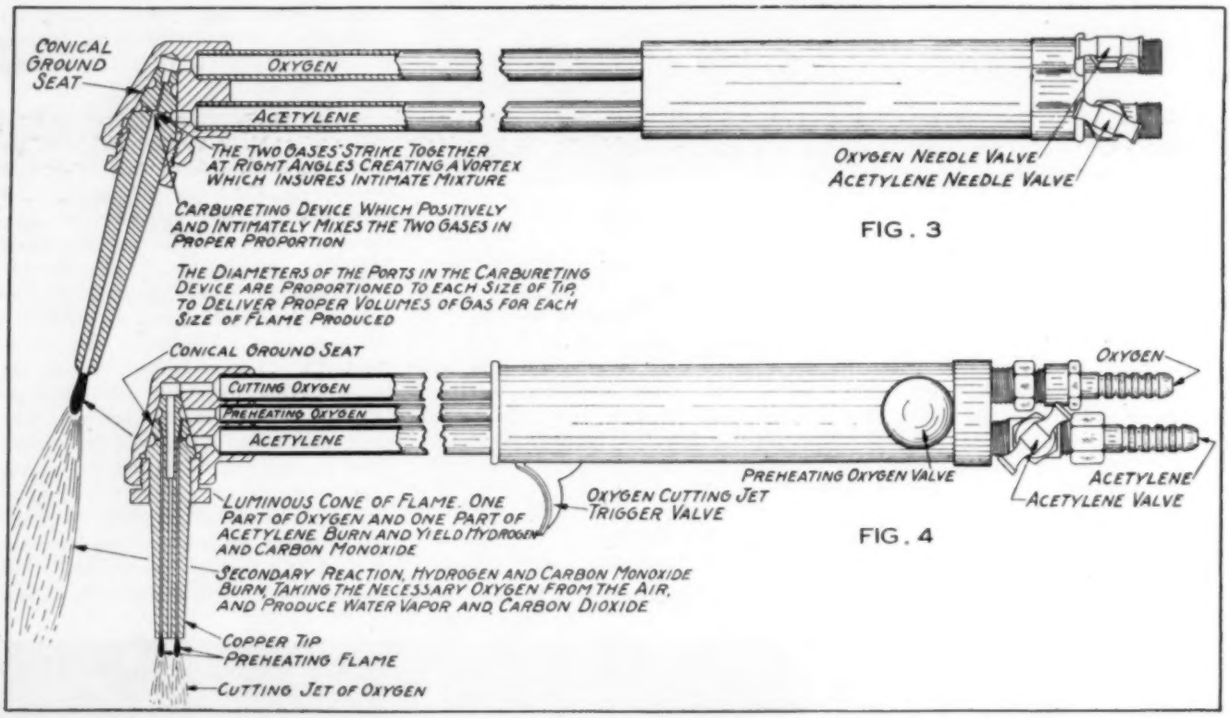
CONICAL GROUND SEAT
OXYGEN
ACETYLENE
THE TWO GASES STRIKE TOGETHER AT RIGHT ANGLES CREATING A VORTEX WHICH INSURES INTIMATE MIXTURE
CARBURETING DEVICE WHICH POSITIVELY AND INTIMATELY MIXES THE TWO GASES IN PROPER PROPORTION
THE DIAMETERS OF THE PORTS IN THE CARBURETING DEVICE ARE PROPORTIONED TO EACH SIZE OF TIP TO DELIVER PROPER VOLUMES OF GAS FOR EACH SIZE OF FLAME PRODUCED
OXYGEN NEEDLE VALVE
ACETYLENE NEEDLE VALVE
FIG. 3
CONICAL GROUND SEAT
CUTTING OXYGEN
PREHEATING OXYGEN
ACETYLENE
OXYGEN
PREHEATING OXYGEN VALVE
ACETYLENE
ACETYLENE VALVE
OXYGEN CUTTING JET TRIGGER VALVE
LUMINOUS CONE OF FLAME. ONE PART OF OXYGEN AND ONE PART OF ACETYLENE BURN AND YIELD HYDROGEN AND CARBON MONOXIDE
SECONDARY REACTION, HYDROGEN AND CARBON MONOXIDE BURN, TAKING THE NECESSARY OXYGEN FROM THE AIR, AND PRODUCE WATER VAPOR AND CARBON DIOXIDE
COPPER TIP
PREHEATING FLAME
CUTTING JET OF OXYGEN
FIG. 4

FIG. 3—GENERAL ARRANGEMENT OF A PROPERLY CONSTRUCTED WELDING TORCH. FIG. 4—GENERAL ARRANGEMENT OF PROPERLY CONSTRUCTED CUTTING TORCH

exception of a few impurities, which need not be given consideration.

There are two definite stages of combustion of the oxy-acetylene flame; one is termed the luminous cone of flame. In this stage of combustion theoretically one part of oxygen and one part of acetylene burn, and yield hydrogen and carbon-monoxide. In the secondary reaction, which is usually called the enveloping flame, or the envelope, hydrogen and carbon-monoxide burn taking the necessary oxygen from the air and produce water vapor and carbon dioxide. This secondary reaction forms an envelope of burning non-oxidizing gases, which practically surrounds the heated metal during the welding operation and prevents its absorption of oxygen from the air. It is this enveloping flame and the and some definite way to deliver the gases in proper proportion. This is accomplished in properly designed torches by leading the gases through small ports of proper diameter, so that the velocity in each instance is high. These ports are arranged at right angles to deliver the jets of gas in fast flowing streams, which strike together and produce a vortex.

In this manner the two gases are thoroughly and intimately mixed before they pass through the tip to the first stage of combustion. They are, also, mixed in as nearly the proportion of 1:1 as is practicable under working conditions, this proportion being determined by the diameter of the ports leading the gases together and the pressures at which they are delivered. It is, of course, necessary that these pressures different thicknesses of metal. In order that this may be accomplished, the size of the longitudinal bore through the tip and the diameters of the oxygen and acetylene ports must be in proper proportion so that at the pressure given by the regulators, the right amount of each gas will pass through these ports. There is one oxygen port and two or more acetylene ports, the oxygen port being vertical and the acetylene ports horizontal. These ports meet at right angles at the upper end of the longitudinal bore through the tip. The streams of unlike gases, consequently, enter this longitudinal bore under high velocity and strike together creating the vortex we have already described.

Fig. 3 clearly shows the luminous cone of flame produced and also the secondary reaction, or enveloping flame which

surrounds the weld. The torch is held by the operator in such manner that the luminous cone of flame barely touches, or is a short distance away from the metal, which is being welded. It will be readily understood that if there is an excess of oxygen passing out of the luminous cone unconsumed, it will come in contact with the molten metal, which is being welded and cannot help but produce an oxidizing effect. This renders the weld much weaker than if complete combustion were attained.

It will, therefore, be appreciated that the design and construction of the torch is a vital factor in the success of the process, and that a positively neutral flame must be secured. Many operators do not appreciate these facts and pay little, or no attention to the character of the flame, and this results in failure which unfortunately cannot always be detected until the weld is placed under a strain. A little thought on this subject will make it apparent that the two gases must be under a constant pressure to maintain the neutrality of the flame, and that this constant pressure is dependent upon the regulators attached to the sources of supply of oxygen and acetylene. It is, therefore, essential that both regulators be so designed and constructed that these pressures will be steady and even.

Welding Supplies and Materials

In welding cast iron, aside from the importance of preheating and of thorough and proper mixture of the gases in the torch, there is another factor upon which the whole success of the weld is dependent. In making a cast-iron weld, whether the defect is a sand-hole or a crack, the metal adjacent to the break or hole must be chipped, or v'd, until the included angle between the faces of the break is 90 degrees. After the casting has been properly preheated and the torch applied, the sides of the break are melted away with the torch, and the entire opening slowly filled with cast iron fused into it by melting welding rods held by the operator. The operator ordinarily uses the cast iron rod as a puddling stick, with which he is able to work out slag, blowholes, etc.

The strength of the weld is dependent upon the composition of the welding rod used. It is a well-known fact that silicon in cast iron tends to promote the formation of graphite making the iron soft. Manganese and sulphur, on the other hand, have just the opposite effect. Cast-iron rods, therefore, should be high in silicon, and the grade of iron used in their manufacture must be of the best. The rod must be cast in a heated metal mold in such manner that it will be free from sand and that it will not become chilled on the surface.

FIG. 5—PREHEATING THE CASTING PRIOR TO WELDING

In New England, there are a great many cast-iron welding rods upon the market which contain little silicon, no graphite carbon and are high in manganese and sulphur. They are, also, of a poor grade of iron, and are sold at a low price. The use of such welding rods tends to produce white or chilled iron, which makes the weld intensely hard. The use of proper welding rods increases the amount of silicon in the weld, decreases the manganese and sulphur and enables the operator to produce a soft weld, which may be machined without trouble. It would, perhaps, surprise a good many people to know how many jobbing machine shops in Boston will turn down an iron casting if the machining upon it involves the machining of a welded part Much of this trouble lies in the use of the cheaper grades of welding rods. Even some of the larger companies, which depend entirely upon purchasing agents to buy supplies, price being the only consideration, experience identically the same difficulty, because the welder is utterly unable to produce a satisfactory weld with a poor welding rod.

The manufacture of good welding

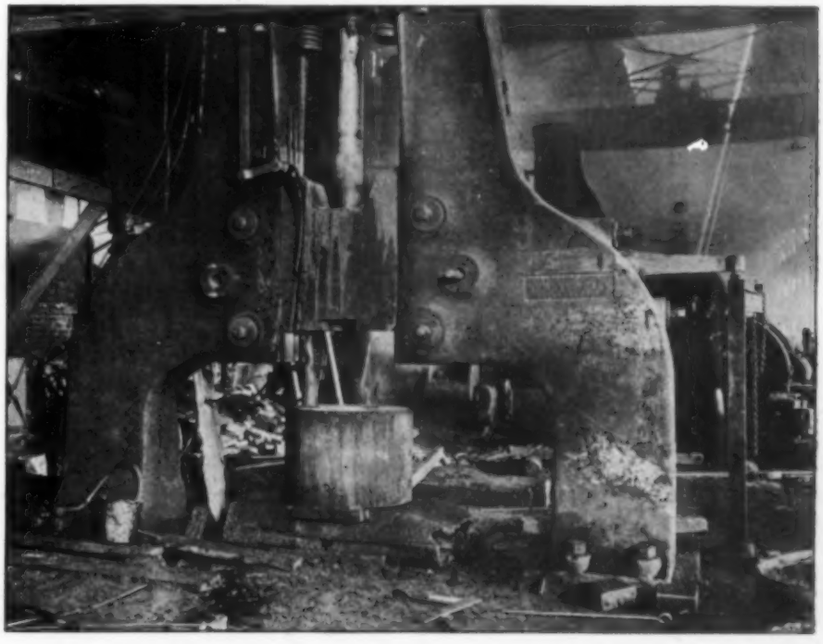

FIG. 6—LARGE STEAM HAMMER WITH WELDED LEG

rods cannot be carried out in an ordinary foundry, as the iron is not suitable for the purpose. The production of such rods is the work of a special foundry, properly equipped, and with accurate knowledge of the requirements.

Object of Fluxes

A good scaling powder is, also, essential in making a cast-iron weld. Melted cast iron has a great affinity for oxygen, which combines with it to form an oxide of iron, or slag. The oxide is lighter than the melted metal and does not melt at quite so low a temperature. As the oxide rises to the surface, a great deal can be removed by scraping it away with the welding rod. The object of a flux in this connection is to provide a chemical which at the high temperature involved will break up the oxide into its component parts. Two chemicals in the flux combine with the oxygen in the slag, releasing the iron. This allows the oxygen to pass off in the form of carbon monoxide, or carbon dioxide.

When the torch is first applied to cast iron and the metal becomes fused, the molten metal from the two pieces to be welded will not run or melt together on account of the film of oxide covering each mass. The application of a small quantity of flux renders the surface of the metal clear and mirror like, and under such conditions the two masses of metal will quickly flow together in conjunction with the melted welding rod.

If, in the various foundries where cast-iron welding is being accomplished, the foreman in charge of the department would give more attention to the grade of the cast-iron rod he is using, his department would be far more successful in producing proper welds. It requires, as a rule, but a few cents worth of welding rods to complete a weld, and the value of an expensive casting may be dependent absolutely upon the strength of the material used. Therefore, a proper rod cannot be considered from a standpoint of price. The best grade of rod obtainable is by far the least expensive.

It is not the purpose in this paper to attempt to refer to or illustrate the many important pieces of work which have been accomplished by the oxy-acetylene welding process. We are illustrating, however, a particularly interesting piece of work recently completed in Chicago. Figs. 1, 2, 5 and 6 are reproductions of photographs of a steam hammer, the cast-iron leg of which was broken completely off. The break occurred on a Tuesday morning. On Tuesday afternoon preparation of the casting began. It was necessary to chip or "v", the break clear around the leg. Welding was started on the following Friday and completed on Saturday night. The hammer was assembled Monday morning and put in operation the following Wednesday morning. It has been working day and night, since the break was repaired. In all, the repair required 16 linear feet of welding in cast iron ranging from 2 to 3 inches in thickness; 2000 cubic feet of oxygen and about 1800 cubic feet of acetylene were consumed. The welding required the services of four men, each relieving the other.

Fig. 5 shows the leg lying flat on the floor of the shop, the break having been enclosed in a rough brick furnace. In this manner the heat was confined, and the temperature maintained to a very even degree. Preheating was accomplished with large fuel-oil burners. The job is interesting, because it will be readily appreciated that the tensile strength of the weld must, in this instance, have been sufficient to stand up under the very severe strain to which a machine of this type is subjected.

An interesting application of the welding process was tried on the broken cast-iron cylinders of two of the interned German steamships which were recently taken over by the United States government, and repaired at a certain navy yard. These cylinders were badly broken. In many instances pieces had been entirely removed from them and disposed of. In such instances, it was necessary to recast new parts the shape of the broken ones and weld these new parts into place. Perhaps, the only way the extent of the welding accomplished on these vessels may be appreciated, would be the consideration of the list of breaks which are given in the table.

This work was all accomplished between June 21 and July 23, approximately one month. It is difficult to believe that it could have been accomplished with any other process, or by mechanical means. Similar work was attempted with the electric arc, but did not prove as successful as with the oxy-acetylene torch. The use of the electric arc, as applied at other navy yards to similar work, necessitated a steel casting, the shape of the broken part, as the arc does not produce satisfactory results in connection with cast iron. The new cast-steel part was attached to the main body of the cast iron cylinder through the use of steel spuds screwed into the casting and set as close together as possible.

The cutting process is now generally understood by the great majority of foundrymen. It is, of course, not applicable to the iron foundry, but is exceedingly useful in the cutting risers in the steel foundry. Cast iron cannot be cut with the oxy-acetylene torch, but cast steel is quickly and easily cut at a reasonable cost. It is so much more convenient to take the torch to the castings than to transport a heavy casting to the saws and strap it into position for sawing. Without doubt the cost of sawing a riser is less than the cost of cutting it with the oxy-acetylene torch, unless consideration is given to the time required to place the casting at the saw, and the much greater length of time required for sawing.

How to Weld Economically

In connection with cutting, as in welding, it is essential that the torch be properly designed and constructed in order to do the greatest amount of cutting with the lowest possible consumption of oxygen and acetylene. A properly constructed torch is illustrated in Fig. 4. As in the welding torches, the two gases are led together through small ports, under high velocity, but as cutting is an oxidizing process, it is not necessary that the preheating flames be absolutely neutral in character, as is essential to good welding. It is, however, necessary that the gases be applied and the tip of the torch so arranged that the torch will cut cleanly and efficiently any thickness of riser to which it may be applied. This is accomplished with the torch shown in Fig. 4 through the use of interchangeable tips, which are furnished in many different styles, each style suitable for the class of work in view. For light and intermediate cutting, the greatest economy is obtained through the use of two preheating flames; for heavy cutting, where a good deal of sand is encountered, it is sometimes desirable to use four, or more, preheating flames.

This development has been so rapid, however, that sufficient consideration could not be given to the proper instruction of skilled operators. In the past most men who have learned to weld or cut have done so despite the difficulties which they encountered and under conditions which did not produce the most successful results. It is without doubt appreciated that today there is more urgent necessity for skilled operators than for development along other lines. This need is being met by the establishment of welding schools where complete courses of instruction are given. The foundryman of today can profit most in connection with the process if he will give careful attention to the kind of instruction given his operators. Even in the case of a skilled welder, a few weeks in a welding school will bring out methods of operation with which he is not familiar, and will teach a great deal which will be new and useful. His efficiency and the efficiency of the process is largely dependent upon his own knowledge and skill in connection with his trade.

Heavy Demand

For Toluol Being Taken Advantage of By Some Speculators

New York, Nov. 17.—Unprecedented shortage of toluol arising from government needs for trinitrotoluol is being taken advantage of by some speculative interests who are asking high prices for the small quantities that come into their hands. It is safe to say that the amount of toluol affected does not form even an appreciable fraction of the output and hence is having no noticeable effect on the amount available to the government. However, this attitude of some speculators is radically different from that of all the important producers. The latter interests refuse to book a pound of toluol even for their regular customers unless the latter have a statement from proper government officials which stipulates the requirements as necessary.

Coke Oven By-Products

Spot

Per Gallon at Producers Plant

Pure benzol	$0.44 to .49
Toluol	1.70 to 1.80
Solvent naphtha	.17 to .20

Per Pound at Producers Plant.

Phenol	$0.50

Per 100 Pounds at Seaboard

Sulphate of ammonia	$4.90 to 5.00

Contract

Per Gallon at Producers Plant

Pure benzol	$0.44 to .49
Toluol	1.50 to 1.80
Solvent naphtha	.17 to .20

Per Pound at Producers Plant

Phenol (nominal)	$0.50

Per 100 Pounds at Seaboard

Sulphate of ammonia	nominal

Large sales of benzol were made this week and bookings aggregated many hundred thousand gallons. Because of the large amount of benzol which has accumulated, however, this business had had no effect on the market which still may be quoted at 44 to 49 cents per gallon, both for spot and contract. A number of new inquiries have come from foreign users.

Heavy sales of phenol have been made of late with the result that the greater part by far of the first quarter output is disposed of. Inquiries continue to come out freely. Most of them, however, involve only a few prompt carloads. The market is quoted at 50 cents per pound, minimum.

Although inquiries for solvent naphtha again show improvement this week, the volume of business is slow to overtake production. Unsold stocks are fairly large. The market is quoted at 17 to 20 cents per gallon at producer's plant. Sulphate of ammonia is quiet and unchanged, the sold-up condition of producers precluding any bookings except a few spot carloads. Prices remain at $4.90 to $5 per 100 pounds, at seaboard.

Large Tonnage

Of Steel for American Ships Placed in Canada—Exports Barred

Toronto, Nov. 19.—The Dominion Bridge Co. has received an additional order for fabricating structural steel from the American International Shipbuilding Corp., to be used in building cargo ships for the United States government. The two orders thus received by the Dominion Bridge Co. amount to 40,000 tons of steel plates and shapes. The fabrication of these steel orders will take up the entire capacity of the Montreal and the Toronto plants of the company.

The postal census of the manufacturers of Canada, taken in 1916 for the calendar year 1915, just issued, shows a general expansion in the manufacturing business of the dominion. The number of establishments in operation were 21,306, representing an invested capital of $1,994,103,272, employing 52,683 persons on wages, and producing goods to the value of $1,407,137,140 from raw material valued at $802,135,862. During the decade 1905-15 the number of establishments increased by approximately 34 per cent; capital 135 per cent; employes on salary 44 per cent; employes on wages, 29 per cent; salaries, 96 per cent; wages, 70 per cent, and the value of products, 95 per cent. The value of the products of factories in 1915 was $1,407,137,140, as compared with $718,352,603 in 1905.

Following the example of the United States, the Canadian government has decided to prohibit the exportation of iron and steel in finished or semifinished forms, including pig iron, steel ingots, billets, rods, shapes, angles and plates, except under license from the department of customs.

The Canada Foundries & Forgings Co. of Montreal, which has received from the American government an order for 1,000,000 75-millimeter shells, being the initial contract of the kind placed in Canada, has begun deliveries. The company has orders on hand sufficient to keep its plants working at capacity day and night until at least May.

Refractories Short

Scarcity of Fuel and Cars Seriously Affects the Supply

New demand continues to be made by steel manufacturers and others of refractories interests, but the supply is not adequate to meet requirements where anything like early delivery is desired. The shortage of coal still hampers output and manufacturers are hoping that means now being taken by the government to insure greater supplies of coal will put the industry back on the producing basis, which will be more nearly normal. Scarcity of cars is also another factor which continues to handicap business in refractories considerably. Sellers, particularly in the central states, have been unable to get much more than 20 per cent of the cars required in the proper handling of their inquiries for several weeks, and as yet no prospects are in view of early relief; in fact, the car shortage at present appears to be becoming more serious. Considering the obstacles confronting the industry, it is meeting with a great degree of success in taking care of deliveries. Prices, despite handicaps and difficulties which stand in the way of trading, have remained nominally unchanged throughout the country, no revisions having been made to any appreciable degree since May.

Refractories

(Per 1000 f. o. b. works.)

FIRE CLAY BRICK.

(First Quality.)

Pennsylvania	$45.00 to 55.00
Missouri-Illinois	55.00 to 65.00
Ohio	45.00 to 50.00
Kentucky	45.00 to 55.00
New England	55.00 to 65.00

FIRE CLAY BRICK.

(Second Quality.)

Pennsylvania	$40.00 to 50.00
Ohio	37.00 to 40.00
New England	48.00 to 58.00

SILICA BRICK.

Pennsylvania	$50.00 to 60.00
Chicago	55.50 to 65.50
Birmingham	45.00 to 55.00

MAGNESIA BRICK.

(Per Net Ton.)

9 x 4½ x 2½	$135.00 to 160.00

CHROME BRICK.

(Per Net Ton.)

9 x 4½ x 2½	$135.00 to 140.00

BAUXITE BRICK.

(Per Net Ton.)

55 per cent.	$40.00 base
76 per cent.	100.00 base

The Central Falls, R. I., Lamp Works, a branch of the General Electric Co., has given its 550 employes a 10 per cent bonus.

Foundrymen Organize for War Work

Plan Co-operation of Hundreds of Steel, Gray Iron, Malleable and Nonferrous Plants With National Government Through Representative Bodies—Prices of Castings to be Fixed in Line With Pig Iron

THAT the policy of price fixing in the iron, steel and allied industries is going to be far-reaching in its effect is indicated by the steps that have been taken to establish prices on steel, malleable iron, gray iron and nonferrous metal castings. The size and influence of this undertaking can best be measured by the number of casting plants in the United States, which total more than 6000. In the cast steel and malleable iron industries actual contact with the producers is not so difficult of accomplishment as in the gray iron and brass branches. More than 4000 shops in this country make gray iron castings and the individual brass foundries approach 2000 in number. However, the co-operation of all is assured although the task is unlike that hitherto attempted where the products were all more or less standard.

Steel Foundrymen Act

The first problem to be attacked consists of the establishment of prices for steel castings and with this end in view a general meeting of open-hearth, converter, crucible and electric steel foundrymen was held at the Waldorf-Astoria, New York, Friday, Nov. 16. The industry was unusually well represented, more than 100 manufacturers having been in attendance. The entire situation was discussed at length and all of the speakers voiced one sentiment, namely their unselfish aid and support of the government in this great crisis. Numerous patriotic addresses also were made and a resolution was adopted pledging the output of the steel casting plants of the country to the government. A method of procedure was considered and adopted for the purpose of establishing prices on steel castings in conformity with the recently established prices on pig iron and steel products.

For the purpose of co-operating with the general committee of the American Iron and Steel institute in price establishment, the following committee was appointed:

Chairman, G. H. Johnson, Isaac G. Johnson & Co., New York; E. S. Knisely, Bethlehem Steel Co., South Bethlehem, Pa.; H. D. Hammond, American Steel Foundries, Chicago; H. E. Field, Wheeling Mold & Foundry Co., Wheeling, W. Va.; S. P. Bush, Buckeye Steel Castings Co., Columbus; I. W. Frank, United Engineering & Foundry Co., Pittsburgh; H. J. Koch, Fort Pitt Steel Casting Co., McKeesport, Pa.

At the recent annual meeting of the American Foundrymen's association, the appointment of a war service board of five members was authorized. This board is to consist of representatives of every branch of the foundry industry irrespective of membership in any organization. Subsidiary boards or committees are to be appointed to serve under this general board to represent the special lines of each branch of the foundry industry. This war service board is to form a point of contact with the government in the securing of castings of proper quality, at desired rates of production, at fair prices to meet the needs of the government.

In the manufacture of castings, labor costs are by far a more important factor to consider than the prices of metals and other raw materials entering into their production. Only in the nonferrous branch of the industry is the metal cost the controlling factor. On the other hand, in the manufacture of pig iron and rolled iron and steel materials, labor costs do not begin to represent so large a percentage of a total as in the foundry industry, and since wages have mounted to previously unattained levels in casting shops, it is doubtful if the downward price revision will be proportionate to the reduction made on the major lines of iron and steel commodities. The wide variety of patterns, variations in weights of the thousands of different models, etc., present a problem that has hitherto not been considered either by manufacturers or the government. That some equitable basis of making readjustments will be arrived at is certain, and this may be made to apply equally to gray and malleable iron, steel and nonferrous castings.

The Fobewood Coal & Iron Co. recently opened offices in the Farmers Bank building, Pittsburgh, in charge of W. W. Woodruff, president and treasurer, and at 1103 Little building, Boston, Mass., in charge of S. D. Fobs, vice president. Mr. Woodruff also is connected with the Aetna Foundry & Machine Co., Warren, O., and is well known in the coal and coke trade. The Fobewood company handles furnace and foundry coke, as well as steam, gas and smithing coal.

Occupies New Plant

The Pittsburgh Saw & Mfg. Co. has recently occupied its new plant at Thirty-second and Smallman streets, Pittsburgh. The officers of the company are: J. G. Vilsack, president and treasurer; Charles Greer, vice president and assistant treasurer; G. W. Agerter, secretary, and J. A. Carothers, manager. Active direction of the plant is in the hands of Mr. Agerter and Mr. Carothers. Mr. Agerter was formerly office manager of the Hunter Saw & Machine Co., Pittsburgh, and Mr. Carothers was formerly superintendent of the company.

The Pittsburgh Saw & Metal Co. will manufacture a complete line of circular metal saw blades and will offer the Simplex inserted tooth saw blades, as well as slitting saws, hot saws, tube saws, pipe cutters, high-speed friction discs, etc., and will also have complete facilities for heat-treating and surface grinding.

Appoints War Committee

The American Boiler Manufacturers' association, in line with a resolution recently adopted at the meeting of manufacturers with the national chamber of commerce, has appointed a war service committee, which shall represent the boiler manufacturers in rendering any necessary service to the government. The committee is as follows: George W. Bach, manager of the Union Iron Works, Erie, Pa.; G. S. Barnum, president of the Bigelow Co., New Haven, Conn., and W. C. Connelly.

Installs Furnaces

The Steel Improvement & Forge Co., Cleveland, makers of heat-treated drop forgings, through W. C. Whyte, secretary of the company, advises that it has completed the installation of four 10 x 5-foot heat-treating furnaces.

Closed Shop is Menace to Victory

Walter Drew Declares Open Shop Typifies American Position in War—Resolution Presented Before National Federation Demanding Steel Corporation and Other Steel Companies Recognize Boiler-Makers Union

A WIN-THE-WAR meeting of New England manufacturers allied with the metal trades industry was held under the auspices of the Boston branch of the National Metal Trades association in the Boston City club, Nov. 16. It was attended by about 300 prominent manufacturers. The afternoon conference was presided over by Winslow Blanchard, of the Blanchard Machine Co., Cambridge, Mass., an ex-president of the Boston branch. Walter Drew, counsel of the National Erectors' association, spoke on the subject, "The Experience of British Industries in the War and Its Lesson to Us". He said that the lesson to us was that the open, not the closed shop, squared with the position of America in the great European war. To argue that the closed shop squared with democracy was called nothing more than a joke. "This is a war between workshops," he said. "Germany's industries at the beginning of the war were so co-ordinated and efficiently managed that they made it possible for her to hold back the opposing armies. The French and English soon learned their lesson, and they reorganized their industries. They learned, moreover, that to win the war they would have to bring them up to the efficiency of Germany."

Referring to strikes, he said that the real ones forced through closed shop conditions are the great menace of the hour. Artificial monopoly has to make good by force or coercion. To establish closed shop industry in this country now means fight. It is a joke to send men into France to fight for democracy and say to the laboring man here that he cannot enter any shop he pleases. After sketching the industrial troubles of England by saying that at the beginning of the war labor unions had so worked upon the industries that the country was falling away in the world trade, he closed by saying that whatever else this war may do for England, one thing is certain, it has saved her as an industrial nation.

Other speakers at the conference were Clarence E. Whitney, of the Whitney Mfg. Co., Hartford, Conn., on the subject, "The Hartford Plan for Co-operative Employment Control", and David S. Earll, employment manager of the New Process Gear Corp., Syracuse, N. Y., on "Our Experience With the Employment of Women".

Many attended the dinner at which Robert G. Morse, president of the Boston branch, was toastmaster. There were five speakers, Walter Gordon, Merritt, New York, counsel of the American Anti-Boycott association.; Lieut. Gov. Calvin Coolidge, of Massachusetts; Col. Tracy C. Dickson, U. S. A., commanding officer at the Watertown arsenal, Watertown, Mass.; Albert Greene Duncan, chairman of the power plant and economy department of the Massachusetts public safety committee, and Henry M. Leland, president of the Lincoln Motor Co., Detroit.

Mr. Duncan discussed the coal situation in Massachusetts. Colonel Dickson spoke briefly of the strike conditions at the arsenal. He stated that the strike grew out of the fact that the New England Structural Co., which holds one of the contracts, was conducting an open shop. He stated that he had expected the backbone of the strike would be broken following the labor gathering in Buffalo, but this has not been the case. Now, he declared, he would "break the strike".

Want Steel Companies to Recognize Unions

The resolutions committee of the American Federation of Labor, in convention at Buffalo, is considering a resolution presented during last week, directly affecting steel companies. It calls for the recognition by the United States Steel Corp., the Bethlehem Steel Corp. and the National Erectors' association, of the bridge and structural ironworkers' union. It calls upon the federation to take up the matter with the secretary of war, secretary of the navy and the council of national defense, in an effort to have the workers accorded the same recognition given to other organized workers on war work.

One of the important moves made by the convention was the endorsement of arbitration boards to be named to deal with irregularities which may arise between munition workers, leather workers, miners, aviation workers and other trades employed in war work, and their employers.

A resolution before the resolutions committee asks the executive council to call the attention of the proper government officials to the allegation that employes in war-working plants are being worked more than eight hours a day, with a view of placing all government supply contracts on an 8-hour basis in compliance with our understanding of the proclamation.

Labor Votes to Stand Behind Government

With 435 delegates out of a total of 450 endorsing the policy of Samuel Gompers, the American Federation of Labor at its annual convention in Buffalo Monday voted to stand behind the government in a vigorous prosecution of the war. This sweeping endorsement, however, followed only after one of the hottest debates in the minutes of the convention, and proved to be the first test of strength between the loyalists of the federation and the pacifist element. This test of strength came up on a report from the committee on resolutions. The committee reported favorably a resolution indorsing the patriotic work of the Alliance of Labor and Democracy, which Mr. Gompers took an active part in organizing as an offset to the People's Council for Democracy and Terms of Peace.

Labor Notes

The 200 strikers of the American & British Mfg. Co., Providence, R. I., are willing to return to work pending a settlement of their grievances by arbitration. The management, however, insists there is nothing to arbitrate. John J. Casey, commissioner of conciliation of the federal department, has been investigating the trouble.

As a result of the closing of the plant of the Maxim Munition Corp., Derby, Conn., by the strike of 350 employes, the machinery and other equipment is being shipped to the United States Cartridge Co., in Lowell, Mass. Of the help, only a few men and girls will be transferred to Lowell for employment.

Autocracy of Labor Must Be Curbed

National Founders' Association Vigorously Assails Attempts to Take Advantage of Wartime Conditions to Change Prewar Relations of Employer and Employe—Members of Society Pledge Aid to Nation

CHARACTERIZING the autocracy of labor fully as disturbing as the autocracy of government and demanding that labor conditions prior to the war be continued during the war, the National Founders' association, at its twenty-first annual meeting, held at the Hotel Astor, New York, Nov. 14 and 15, went on record as favoring the punishment as treason of any action, whether of industry or labor, that will interfere with or restrict production, or of any attempt to change existing working conditions.

A telegram in the form of a resolution bearing the foregoing message and which is published on page 1118, was transmitted to President Wilson, and in the same communication the unswerving loyalty of the members of this organization and the resources of its industrial plants were pledged. Never before in the history of the association has as much interest been taken in the various sessions. The attendance set a new high record. Labor disturbances throughout the country, and the insistent demands for increased wages, coupled with reduced working hours, undoubtedly furnished the incentive that attracted foundrymen from every section of the United States and Canada to this gathering.

IN HIS annual address, William H. Barr, president, referred to the insidious and hostile submarine policy of union labor leaders who are endeavoring to take advantage of prevailing conditions to further their own aims. Mr. Barr stated that national efficiency and prosperity rested upon that foundation of industrial equality and liberty known as the open shop and he added that the 8-hour day is an economic waste and a grave menace in time of war.

The "Submarine" Policy

Referring to the action of so-called leaders of the union labor movement, he spoke as follows:

"Certain adroit labor leaders were at first fearful that national necessities would compel them to make concessions to the government. Accordingly a convention was held in Washington, behind closed doors, and a program adopted. And a figurehead was selected to draw to himself all the vapor of enthusiasm which the American Federation of Labor could manufacture, under cover of which the international unions, acting like submarines, attacked American industry. Fortunately, the public is beginning to understand that such action is consistent and true to union ethics.

"The real situation is a serious one, which is apparently not at all comprehended; if we realized that since our own declaration of war there have been called nearly 2000 strikes, and if we understood all conditions accompanying these demands, we would know that our government, after only six months of hostilities, is sanctifying an industrial status of disastrous socialism similar to that from which England emerged only with a supreme effort, after two years' struggle.

"Among the unfortunate examples of academic industrial theories reacting on manufacturers may be mentioned an agreement between the secretary of war and the American Federation of Labor entered into some months ago, an agreement afterward approved by the secretary of the navy as applied to shipbuilding and other naval construction. This agreement in substance is that any manufacturer accepting certain war contracts should be governed by union hours, wages and conditions at the time nominally in existence in his particular locality.

"In addition, an adjustment commission was appointed to deal with questions arising from any demand for a change of conditions during the progress of the work. The obvious intention of the clever labor leaders, and their success in hoodwinking federal authority, is so clear that comment is unnecessary.

"But this is not all. The United States Steel Corporation, under capable management, has increased wages time and again hours have been readjusted and conditions improved beyond thought of complaint, and there exists no possible excuse for forcing the unionization of the industry. Very recently adroit union leaders, by intimidation or deceit, enlisted the cooperation of ranking federal officers to the extent of inserting a unionization clause in contracts with steel corporations. This was simply another deliberate effort at treachery to the government; an attempted embarrassment to the industry and a skillfully conceived plan which ultimately contemplates forcing every manufacturer to accept the entire labor union program.

Eight-Hour Day an Economic Waste

"We recognize that national emergency measures are now necessary, and are desirous, in so far as possible, of refraining from questioning their advisability. Nevertheless, it is our patriotic duty to dissent sharply from, and urge a modification of, existing unfortunate policies which seem fraught with disaster. Under that head I disapprove the growing tendency toward waste, indicated by the government in its drastic continuance of effort to impose the 8-hour day. Some conditions of labor make the 8-hour day advisable, but by far the greater number of occupations do not need such restriction. Why, then, this federal insistence of reduction in working hours when every nerve should be strained to support our fighting men? Do they battle at the front on an 8-hour schedule? Does the Chief Executive encompass all his duties in eight hours? Can the farmer, without whose support the war cannot be won, increase the products of the soil by reducing his work day to eight hours? In wartime, particularly, the 8-hour day is a luxury which must yield to the demands of national necessity. The conservation

New Officers of N. F. A.

PRESIDENT
William H. Barr, Lumen Bearing Co., Buffalo

VICE PRESIDENT
Samuel L. Moore, Moore Bros. Co., Elizabeth, N. J.

SECRETARY
J. M. Taylor, Chicago

COMMISSIONER
A. E. McClintock, Chicago

and development of America's manufacturing facilities must be equal to the demands of war.

"When there was a suggestion of hostilities the industries of the United States laid before the government their plants, their individual efforts and their resources, all of which were thankfully accepted. Later, the government officials became voluble in criticism and denunciatory of alleged profiteering. The facts, however, were immediately available, and these charges were dissipated, but not before the reason for them became apparent. The cover of patriotism was not sufficient to conceal from the public all of the union activities. Through that medium legislation was started to force manufacturers to do what they had already done tenfold, while the international unions ran rampant through the country."

In Government Service

Referring to the United States public service reserve division of the department of labor, Mr. Barr stated that it is held substantially in the grasp of union representatives. The purpose of the reserve is to register all persons available for emergency service by having the individual sign an application containing his address and answers to a variety of occupational questions. Mr. Barr added that the literature of this enrollment bureau has been skillfully prepared, and the casual applicant will not realize that in the answers filed he has reported his industrial status in an atmosphere surcharged with unionism.

The association is maintaining its interest and activities in four national conference boards, all dealing with problems of great importance to the members of the association. Mr. Barr stated that the present value of the national industrial conference board lies in its having become an authoritative spokesman for the manufacturing interests of the country.

Realizing the full seriousness of the industrial situation, the conference board recently submitted to the council of national defense a comprehensive and illuminating statement of actual labor conditions, together with definite recommendations designed to meet the situation. The statement presented to the secretary of war as chairman of the council, depicts the labor situation in concise language, particularly emphasizing the fact that more than 90 per cent of the establishments capable of manufacturing ammunition are conducted on an open-shop plan. While urging mutual understanding between employer and employe, the conference board particularly indicates that every industrial dispute, whatever its motive, which interrupts production will only help and encourage the common enemy.

James K. Cullen, of the Niles-Bement-Pond Co., outlined briefly the experiences of a 6-month molders' strike at one of his plants at Hamilton, O. The peculiar feature of this labor difficulty was the fact that an advance in wages had been made only a few days prior to the walkout, which raised the basis considerably above the union scale. However, union recognition was demanded and was insisted upon, notwithstanding the fact that practically 90 per cent of the business at this plant was intended for government ammunition work. No regard was given this feature by the union, but notwithstanding these efforts, the foundry is again operating in full on the open-shop basis. His experience with this strike led Mr. Cullen to the conclusion that labor lacks patriotism.

Work or Fight!

George F. Monaghan, general counsel of the association, delivered a virile, patriotic address in which he demanded that labor be given the choice either of remaining at its accustomed occupation or shouldering a musket and being placed on the firing line.

Notwithstanding the labor unrest

New Administrative Council of National Founders' Association

The following members of the various district committees were chosen:

First District

F. C. Fromm, Manufacturers' Foundry Co., Canterbury, Conn.
A. E. Newton, Reed-Prentice Co., Worcester, Mass.
Enoch Shenton, William Highton & Sons Co., Nashua, N. H.
C. C. Chesney, General Electric Co., Pittsfield, Mass.
C. H. Tholl, General Fire Extinguisher Co., Providence, R. I.

Second District

D. W. Sowers, Sowers Mfg. Co., Buffalo.
H. P. Macdonald, Snead & Co. Iron Works, Jersey City, N. J.
James H. Caldwell, Ludlow Valve Mfg. Co., Troy, N. Y.
A. S. Blagden, American Malleables Co., Lancaster, N. Y.
Louis P. Willsea, Willsea Works, Rochester, N. Y.

Third District

Ely Griswold, Griswold Mfg. Co., Erie, Pa.
Wm. S. Hallowell, Harrison Safety Boiler Works, Philadelphia.
G. S. Koch, Fort Pitt Steel Casting Co., McKeesport, Pa.
J. Turner Moore, Reading Steel Casting Co., Reading, Pa.
John E. Thropp, John E. Thropp's Sons Co., Trenton, N. J.

Fourth District

George O. Rockwood, Rockwood Mfg. Co., Indianapolis.
Charles F. Seelbach, Forest City Foundry & Mfg. Co., Cleveland.
Samuel Blackburn, John B. Morris Foundry Co., Cincinnati.
E. R. Frost, National Machinery Co., Tiffin, O.
James Inglis, American Blower Co., Detroit.

Fifth District

H. T. Hornsby, Central Foundry Co., Webb City, Mo.
E. E. Baker, Kewanee Boiler Co., Kewanee, Ill.
W. H. Winslow, Winslow Bros. Co., Chicago.
John B. Strauch, More-Jones Brass & Metal Co., St. Louis.
C. R. Stephens, Moline Plow Co., Moline, Ill.

Sixth District

C. A. Luster, Clyde Iron Works, Duluth.
Max W. Babb, Allis-Chalmers Mfg. Co., Milwaukee.
Fred M. Prescott, Prescott Co., Menominee, Mich.
John G. Osborne, Lakeside Malleable Castings Co., Racine, Wis.
L. R. Barrett, Vulcan Iron Works, Winnipeg, Can.

Seventh District

George W. Watts, Canada Foundry Co., Ltd., Toronto, Ont.
A. R. Goldie, Goldie McCulloch Co., Ltd., Galt, Ont.
H. Cockshutt, Cockshutt Plow Co., Brantford, Ont.
J. C. Russell, John McDougall Caledonian Iron Works Co., Ltd., Montreal, Que.
W. M. Gartshore, McClary Mfg. Co., London, Ont.

Eighth District

Z. W. Wheland, Wheland Co., Chattanooga, Tenn.
W. D. Tynes, Hardie-Tynes Mfg. Co., Birmingham, Ala.
E. Y. Hartwell, Hartwell, Iron Works, Houston, Tex.
George R. Lombard, Lombard Iron Works & Supply Co., Augusta, Ga.
J. Goslin, Joubert & Gosline Machine & Foundry Co., Birmingham, Ala.

O. P. Briggs again was elected honorary member of the administrative council.

that existed in the foundry industry during the last 12 months, the association gave its support to only 12 strikes which involved 572 molders and coremakers. This is an exceedingly favorable showing, as contrasted with the report of the previous year when support was given to strikes in 28 shops involving 1231 molders and coremakers. In his annual report, Commissioner A. E. McClintock stated that in analyzing the cause of the strikes during the past year, the refusal of the employer to concede union control was the chief point of contention. The wage question as the strike issue was unimportant, since the law of supply and demand automatically fixed the wage basis.

Secretary J. M. Taylor reported an increase in the membership of 56 with 22 resignations, making a net gain of 34. The average number of employes in the shops of the members showed a gain over the previous year of about 10 per cent. Referring to the closed shop menace, Mr. Taylor spoke as follows:

"With our government the largest purchaser, and the desire of all to go to any extreme to eliminate strikes and insure a steady and efficient production of war supplies, the closed shop becomes a serious question. President Barr has called attention to the fact that closed shop leaders have been selected to represent labor on all government boards; that there is a concerted effort on the part of these leaders to force the manufacturer of every article which the government requires to operate under closed shop conditions. With the prestige of their government positions, there is danger that their ambition may be accomplished unless more is done by the manufacturer to inform the public on the questions at issue.

"It should be brought home to the people that no greater handicap can be placed upon the manufacturer than to have to contend with closed shop restrictions and the most important element in efficiency is a free and independent labor market; that the strike and the closed shop necessarily go together. With a complete monopoly of labor in the hands of a few union leaders, it is inevitable that sooner or later it will be used injudiciously."

How to maintain the normal production of castings regardless of the decline of 25 per cent in available labor, was the sole topic of discussion at one of the sessions. The opinion was expressed that the jobbing foundries of the country are not producing in excess of 50 per cent of their capacity, and President William H. Barr pointed out that it is the patriotic duty of jobbing casting manufacturers to maintain their normal production in spite of the labor shortage. To accomplish this, the installation of molding machines and other labor-saving equipment was recommended, and to show how effective these mechanical molding devices are in many progressive plants throughout the country, a magnificent series of motion pictures was displayed.

In practically all of the plants in which the operations of making molds, pouring and shaking-out were depicted, the application of molding machines and other equipment increased the output four and fivefold, and in some of these shops skilled labor has been replaced entirely by handymen. In practically none of these plants are the men employed on a day basis, piecework prevailing, and with this added incentive, their earning capacity not only is greatly enhanced, but the production of molds and castings is proportionately increased. The plants whose operations were shown by moving pictures follow: King Sewing Machine Co., Buffalo; Buick foundry of the General Motors Co., Flint, Mich.; Eddy Valve Co., Waterford, Conn.; McClary Mfg. Co., London, Ont., and the Lumen Bearing Co., Buffalo. W. H. Barr, president of the association, who also is head of the Lumen Bearing Co., stated that the employes of his foundry now are averaging an output of 1108 pounds of castings each, of an average weight of less than three pounds.

L. F. Loree, president of the Delaware & Hudson railroad, graphically described the situation in which the country's railroads find themselves in trying to do their bit in winning the war. After detailing the economy and improved efficiency which is being effected, Mr. Loree concluded that the railroads have on hand sufficient equipment and sufficient supplies to insure their satisfactory operation for at least 18 months. For the handling of passengers there is a surplus of rolling stock; of locomotives there are enough for all essential purposes, and they are in splendid condition. It is in the lack of freight cars that the present difficulties originate. To minimize the shortage of cars, Mr. Loree said that careful study has been made of existing railroad methods resulting in greatly decreasing the amount of time a car is in transit. He spoke of instances where, by speedy handling, the time spent in shifting a car

N. F. A. Points Out Need for Co-operation of Labor

IN A telegram to President Wilson, the National Founders' association pledged the support of all of its members to the task of winning the war, but pointed out the importance of enlisting the wholehearted co-operation of labor. "Autocracy of labor," said the telegram, "is fully as disturbing to the welfare of mankind as autocracy of government." The telegram follows:

The National Founders' association, composed of nearly 600 manufacturers operating iron and steel foundries, and employing scores of thousands of workmen, in annual convention assembled, unanimously pledges to you and our country, the unswerving loyalty of its members and the resources of its industrial plants.

To gain that measure of efficiency requisite for the proper equipment of our army and navy we stand squarely on the platform that the processes of labor shall not be interfered with and trust that employes throughout the various industries of the nation may quickly be brought to a realization of the fact that autocracy of labor is fully as disturbing to the welfare of mankind as the autocracy of government. With full and complete support of their employes, the manufacturers of our country will back the boys in the trenches to the limit without thought of emolument, but they will be powerless unless the present autocratic demands of some branches of labor for purely selfish advantage are dissipated.

We are unqualifiedly in accord with the declaration of the council of national defense in demanding that industrial and labor conditions, as existing prior to the war, should continue for the duration of the war. Any action to the contrary, whether of industry shirking its duty or labor interposing restrictions of production and attempts to change existing conditions, shall be regarded as treason and punished as such.

We realize that there must be absolutely loyal co-operation between employer and employe until this war is won; that patriotism must be unsullied and uninfluenced by personal gains and selfish considerations; that the mutual pledges of representatives of the workingmen and directors of industries must be kept inviolate until a righteous peace is re-established on the earth.

through various freight yards on a long haul had been cut down more than one-half, and he added that such elimination of needless delays rapidly is becoming universal and permanent in American railroading. He bespoke for the railroads the co-operation of the shippers in loading cars to capacity and loading and unloading them without delay. Mr. Loree also asked that shippers abandon the present policy of duplicating car orders with two or more roads.

William M. Taylor briefly described the work of the Winona foundry school at Indianapolis. For several years this institute has been shut down, but recently has been reopened and the manufacturers of Indianapolis and vicinity have outlined a course of instruction covering a period of two years. At the end of that time they agree to take graduates into their plants and will pay them at the rate of 20 cents an hour. Mr. Taylor stated that it is altogether probable that this rate will have to be increased somewhat to interest young men in foundry work.

The annual banquet was held at the Hotel Astor, Wednesday evening, and a patriotic address was delivered by Hon. Charles S. Whitman, governor of New York.

Valuation of Contracts Placed Increases

Statistics of building and engineering operations, compiled by the F. W. Dodge Co., for the first 10 months of the current year and comprising data of that territory bounded by the Ohio river on the south and the Missouri river on the west, show that the valuation of contracts awarded during that period was $1,433,092,000 for 1917, as compared with $1,121,616,397 for 1916 and $769,173,100 for 1915. Similar data compiled for West Virginia, Ohio and western Pennsylvania, show that the valuation of contracts awarded during the first 10 months of the year were $179,620,000, as contrasted with $141,178,000 for 1916 and $103,775,000 for 1915.

New Malleable Foundry is Soon to be Operated

A new malleable iron foundry to have an annual capacity of 6000 tons of castings yearly is being built by the Minneapolis Malleable Foundry Co., Minneapolis. A part of the plant has been completed and the installation of equipment commenced. The company plans to start operation in a limited way about Dec. 1, pending the completion of the entire plant. Contracts have been made covering a large part of its capacity. It is planned to specialize in light malleable castings; power squeezers have been installed and all melting and annealing will be done with fuel oil. The company is a Minnesota corporation, organized with a capital stock of $100,000. F. C. Hughes is president and E. H. Williams is secretary and treasurer.

Bureau Analyzes Accidents of Machine Building

With the belief that lack of detailed information is doing much to retard the effectiveness of safety campaigns, the bureau of labor statistics has just issued a bulletin entitled "Accidents and Accident Prevention in Machine Building", which will be of interest to officials of a large group of plants. It discusses the prevalence, causes and effects of accidents. A notable feature of the report is the measurement of accidents according to their severity. Previous studies have been chiefly concerned with the frequency of accident occurrence, and have counted all accidents as of the same value. A broken finger and a broken back have been counted alike in computing accident rates, although clearly the latter is immeasurably more serious. Under the method offered in this report each accident is measured in terms of workdays lost. This is done by valuing a fatal injury, on the basis of life insurance experience, as equivalent to the loss of 30 years of man's working life, while total disability is rated at 35 years. Other injuries are credited with lower time losses in proportion to their probable effect upon earning capacity.

Consider Trade in War

Importance of foreign trade as an aid to successful war as a creation and maintenance of a merchant marine will be among the most important subjects which will be considered by the fifth national foreign trades convention. Announcement now is made that this meeting will be held at the Gibson hotel, Cincinnati, Feb. 7, 8 and 9. James A. Farrell, chairman of the National Foreign Trade Council is expected to issue the official call for the convention in the near future. As is usual at these conventions, the question and answer form of group discussions will take up a considerable portion of the program. The official program will be announced later.

Frederick Happell, of the Adam Happell Iron Works, New York, died Nov. 10, at his home in that city.

Scrap Bureau

To Check Various Evils of Rejections Now is in Operation

Methods by which it hopes to eradicate many of the evils of excessive scrap rejection and to avoid tying up of sorely needed equipment, are set forth in a circular letter to scrap consumers by the newly formed bureau of iron and steel scrap, Widener building, Philadelphia. This bureau is acting in conjunction with the American Railway association, the American Iron and Steel institute, the Eastern and National Bar Iron institute and the American Board of Scrap Iron Dealers. Its organization was provided for at a recent meeting of the national organization of scrap iron dealers at Pittsburgh. P. A. Barnes is chief of the bureau. The main purpose of the bureau, it is set forth, is to assist in reducing the number of cars under load with iron and steel scrap. It is hoped to bring this about by effecting the quick disposition of all rejected cars; by reducing the number of rejections; by preventing congestion or assisting in the disposition of cars in a congested district.

As to the operations of the bureau, the circular to consumers says:

The bureau will not enter into any questions regarding price or contracts or otherwise interfere in the relations between buyer and seller. For the purpose of facilitating the operation of the bureau, will you please have blanks printed conforming to the enclosed sample rejection sheet, which should be used in quadruplicate. The day upon which a car of scrap is rejected please mail one notice to this bureau; one to the shipper; one to the railroad agent making delivery; keeping one for your own file.

The establishment of this bureau does not relieve the shipper or the consignee from making every possible effort to quickly dispose of the car by agreement, but should they fail to do this within 48 hours, the bureau will take such action as is necessary in the circumstances.

The cost of the operation of this bureau is at present being advanced by the American Board of Scrap Iron Dealers, and a punitive charge of $25 will be made against the shipper of every rejected car, which has to be disposed of through this bureau. In cases where dispute arises as to specification, the bureau will send an experienced inspector, who will be an employe of this bureau upon whose report the chief of the bureau will make his determination.

We, therefore, ask the heartiest cooperation of all the parties interested and ask you to treat with this bureau as an absolutely neutral agency. While the office of the chief of the bureau will be located in Philadelphia, we hope shortly to announce subsidiary offices or representatives in the various important consuming centers of the United States.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CHARLES PIEZ, president of the Link Belt Co., Chicago, who has been made vice president of the Emergency Fleet corporation in active charge of construction, is possessed of the qualities that will aid greatly in getting out the tonnage so much desired by the government. Mr. Piez recently was called on by Edward F. Hurley to serve on a committee on production. He reported that his survey of the situation disclosed that lack of the application of sound business principles was the cause of delay in the merchant shipbuilding campaign. As a result he has been picked as the man to begin the application of proper principles to the end that greater speed be obtained, even though it be at the expense of some other factors. Mr. Piez retains his connection with the Link Belt Co. and other interests, taking a leave of absence for six months to serve the government. His presidency of the Link-Belt Co. dates from 1906 when this company was organized as a merger of allied interests including the Link-Belt Engineering Co., Philadelphia; the Link-Belt Machinery Co., Chicago, and the Ewarts Mfg. Co., Indianapolis.

Rufus P. Walker has been appointed manager of the textile department of the Fafnir Bearing Co., New Britain, Conn.

Walton M. Wentz, assistant publicity agent of the Pennsylvania railroad, has been elected a member of the town council, Narberth, Pa.

Lloyd Harris, president of the Russell Motor Car Co., Toronto, has been appointed to represent the Imperial Munitions Board at Washington.

J. J. Byrne has been appointed eastern sales manager for the Locomotive Stoker Co., Pittsburgh, with offices at 50 Church street, New York City.

Joseph Sinkler has resigned as western representative of the Economy Devices Corp. to become Chicago representative of the Perolin Railway Service Co.

Charles K. Logue has been appointed foundry superintendent of the Albany Car Wheel Co., Albany, N. Y. He formerly was affiliated with the Barney & Smith Car Co., Dayton, O.

Wallace D. Simmons, president of the Simmons Hardware Co., St. Louis and Philadelphia, has been appointed by Secretary McAdoo as one of the nine business men to act as excess profits advisers.

C. R. Murphy, Green Bay, Wis., has been elected secretary of the

CHARLES PIEZ,
Newly appointed vice president of Emergency Fleet Corporation

Lawson Aircraft Corp., of that city, to succeed C. I. Smith, who resigned. George W. Ellis is president and Alfred W. Lawson is general manager.

Samuel McRoberts, executive manager of the National City bank, New York, has been called to Washington to assist in the purchasing of war supplies by the ordnance bureau of the war department.

W. C. Webster, for many years secretary and general manager and director of the Nichols Copper Co., 25 Broad street, New York, has resigned. Mr. Webster expects to rest before assuming further duties.

James F. Duff Jr., Worcester, Mass., has gone to Philadelphia to become employment manager at the shipyard now under construction by the American International Shipbuilding Corp. at Hog Island.

L. R. Brink, superintendent of Bernhart Brothers & Spindler, Chicago, has resigned to accept the position of general manager of the Fort Dearborn Mfg. Co., Sterling, Ill., manufacturer of special machinery, gears and metal stampings.

Henry H. Knapp, comptroller of the Laconia Car Co., Laconia, N. H., and formerly assistant treasurer of the Reed-Prentice Co., Worcester, Mass., has resigned to accept a position with the Hyatt Roller Bearing Co., Newark, N. J.

Herbert D. Tremper, who was recently elected a vice president of the Federal Export Corp., 115 Broadway, New York, has returned from France where he has had active supervision of the European branches of the corporation.

Sidney H. Michaels, mechanical engineer of the Pressed Steel Mfg. Co., and the Imperial Appliance Co., Chicago, has received a commission as first lieutenant in the engineer officers' reserve corps at Fort Leavenworth, Kans.

Charles A. Morss, treasurer of the Simplex Wire & Cable Co., Boston, is slated for election as governor of the federal reserve bank of district No. I, the headquarters of which are in Boston. Mr. Morss has been a director of the bank.

W. R. Toppan, for 15 years connected with the Kennicott Co., which recently discontinued business, has been made railroad manager of the William Graver Tank Works, Chicago, which has taken over the Kennicott water softener business.

Carl F. Dietz, sales manager and Clifford S. Anderson, of the legal department of the Norton Co., Worcester, Mass., have returned from an exploration trip to British and Dutch Guiana, South America, where they have been since September.

West Wetsel, Detroit, middle west representative of the Baush Machine Tool Co., Springfield, Mass., has been given a temporary draft discharge to March 1, 1918, on industrial grounds, by President Wilson. This reverses

the decision of the district appeal board.

Earl R. Knight, in charge of the time-study and cost-accounting system at the Washburn shops of the Worcester Polytechnic institute, Worcester, Mass., has joined the United States arsenal forces in Troy, N. Y., as a private mechanical engineer in the ordnance department.

Thomas Quinn, of the Lebanon Steel Casting Co., Lebanon, Pa., will act as consulting engineer in the erection of a steel foundry to be built at Hamburg, Berks county, Pa., by J. D. Driscoll, Reading, Pa. Electric furnaces will be installed for producing ingots.

A. J. Stacey of the traffic department, Trussed Concrete Steel Co., Youngstown, O., has been given a position in the United States ordnance department. In his new work he will be connected with the traffic department of Langley aviation field, Hampton Roads, Va.

G. D. Perley, son of Vice President Ward B. Perley, of the Canadian Steel Corp., Ltd., will become assistant on Jan. 1 to W. H. Knox, of the firm of W. H. Knox & Co., New York, importers and exporters. Mr. Perley has been connected with the Carnegie Steel Co., Youngstown, O., for several years.

Robert Patterson Lamont Jr., son of Robert Lamont, president of the American Steel Foundries, has been decorated with the war cross with palms for bravery in transmitting munitions under heavy fire. He also received the military medal, the highest military distinction in the French army.

O. N. Guldlin, founder of the Western Gas Construction Co., Fort Wayne, Ind., will retire from active management on account of ill health. He will be retained, however, in a consulting capacity. O. B. Young will assume active charge. The company, which builds water, coal and oil gas apparatus and gas holders, has recently increased its capital stock.

Clarence M. Woolley, New York, for many years president of the American Radiator Co., has been appointed a member of the war trade board by President Wilson. He will administer the board's supervision over imports. His appointment gives the secretary of commerce two representatives on the board, the other being Vice Chairman Thomas D. Jones.

Joseph A. Holland, manager of the employment department of the Remington Arms-Union Metallic Cartridge Co., Bridgeport, Conn., has resigned to open an employers' consulting bureau in that city. Before going to Bridgeport in August, 1916, Mr. Holland had charge of the employment department of the General Electric Co., Schenectady, N. Y.

Willard A. Van Brunt, for many years head of the Van Brunt Mfg. Co., Horicon, Wis., manufacturer of grain drills and other agricultural implements, has resigned because of advanced age and a desire to retire from active participation in business. He has been succeeded by John Bodden, who has been associated with the company for a long time. A. W. Wilcox and G. W. Mixter have been elected vice presidents; H. Marsh, secretary and F. H. Clausen, treasurer and manager.

E. B. Hill, Milton, Mass., is one of the officials of the Fore River Shipbuilding Corp., Quincy, Mass., with which he was identified for 17 years and which was recently absorbed by the Bethlehem Shipbuilding Corp., Ltd., who has been selected to prominent position in the councils of the Bethlehem steel interests. Not only has he been elected treasurer of the Bethlehem Steel Co. and the Bethlehem Steel Corp., but he has also been elected treasurer of all the subsidiary companies of the Bethlehem Steel Corp., about 17 in all.

A. H. DILLON,
Who recently became president of the Pittsburgh Export Co.

A. H. Dillon, assistant sales manager of the Youngstown Sheet & Tube Co., Youngstown, O., has resigned to become president of the Pittsburgh Export Co. and a director of the Liberty Steel Products Co., New York. He had been with the Youngstown company seven years. Associated with Mr. Dillon are Charles H. Graham, president of the Graham Nut Co.; J. Roger Flannery, president of the Flannery Nut & Bolt Co.; F. J. Lanahan, president of the Fort Pitt Malleable Iron Co., all of Pittsburgh. Offices of Mr. Dillon's new interests are in Pittsburgh, New York, Youngstown and Paris. He will be in charge of the Youngstown office.

Hugh Chalmers, chairman of the board of directors of the Chalmers Motor Co., and one of the vice presidents of the national automobile chamber of commerce, New York, has been appointed to represent motor manufacturers on a committee which will co-operate with the war industries board of the council of national defense in regulating the use of the automobile plants of the country. The other two members of the committee are A. W. Copland, representing the motor accessories manufacturers, and John R. Lee of the Ford Motor Co. Mr. Copland was chairman of the production schedule committee in the work of designing and equipping the new army truck.

Dr. W. H. Nichols, of the General Chemical Co., New York, has been appointed chairman of a board of six leading chemists of the country to act in an advisory capacity to Secretary of Interior Lane. Other members of the board are Prof. H. P. Talbot, head of the chemical department of Massachusetts Institute of Technology, Boston; William Hoskins, consulting chemist, Chicago, Ill.; Prof. H. P. Venable, head of the chemistry department of North Carolina university, Chapel Hill, N. C.; E. C. Franklin, professor of chemistry, Leland Stanford university, Stanford, Cal., and Dr. C. L. Parsons, chief chemist of the United States bureau of mines. The board will discuss and advise upon gas warfare research, the minerals especially needed for munitions and the recently enacted law for the regulation of explosives.

The annual sales conference of the Norton Co., Worcester, Mass., will take place at the home office building the week of Jan. 7, 1918. The visitors will be guests of honor at the Norton minstrel show, which is to be conducted in the Worcester Theater that week on one of the nights. The conference this year was postponed on account of the absence of Carl F. Dietz, sales manager and several others in South America.

The Thompson Heater Corp., Buffalo, N. Y., contemplates the erection of a new gray iron foundry with a daily capacity of 10 to 15 tons. The equipment has not yet been purchased.

Will Treat Non-Essentials Fairly

War Industries Board Promises No Line of Industry Will be Adversely Affected by Priority Necessities Without Proper Hearing—Railroads May Limit Transportation to Materials Needed for War

WASHINGTON, Nov. 20.—The war industries board will take no steps to eliminate any nonessential industry without due notice and a chance to be heard, according to Judge R. S. Lovett, acting chairman of the board and priorities director under authority recently given the President. His statement followed one by Fairfax Harrison, the chairman of the railroads' war board, who said:

"In the exercise of ordinary prudence it is necessary for us to recognize the fact that the railways are now handling a vastly larger traffic than they ever did before, that the traffic is still greatly increasing, and that, therefore, it may become necessary for the railway industry, as it has become necessary for other industries, to begin restricting its activities to the rendering of services essential to the government in carrying on the war and to the public in providing it with things necessary to its subsistence and comfort.

"The railroads' war board and the managements of the individual railways are putting forth their utmost efforts to meet the transportation demands of the country, and we confidently believe, as we have indicated in previous statements, that under the present arrangement the railways will be able to render all the transportation of essential articles necessary. If, however, more radical measures become necessary, the railroad's war board will not hesitate to recommend such changes."

Contemplates No Further Action

Judge Lovett said that other than his order with regard to open top cars, which was issued several weeks ago, limiting them to carrying only war essentials, he is contemplating no further action with respect to transportation of nonessentials. He puts the priority question for coal up to H. A. Garfield, fuel administrator. The judge said:

As to the war industries board, apart from my action under the priority act with respect to transportation, I may say that the industries of the country would seem to be justified in assuming from the action of the board in the matter of copper and steel prices and its record generally to date, that it is the desire and policy of the board carefully and liberally to conserve the interest and welfare of industries. I feel safe in saying that the board will take no action designed to eliminate any nonessential industry without reasonable notice and opportunity to be heard."

Relative to what the fuel administration may do in regard to nonessentials, Administrator Garfield said:

"If voluntary economy on the part of industrial and domestic consumers added to the increased coal production of 1917, which will reach a total of over 50,000,000 tons, does not provide fuel enough for the war and to keep our people warm there will come a time when some limitation will have to be given thorough consideration and the necessary coal will be obtained with the least possible interference with industry.

Arbitrary Action, Last Resort

"Arbitrary limitation is a last resort and to be avoided if possible. In many cases industrial concerns already have begun a voluntary curtailment of their use of coal. The way to prevent losses incident upon limitation of industry is for every consumer of coal to cut off waste and unnecessary consumption with an iron hand to start on this intensive course of conservation without a moment's delay."

From the statement of these men controlling the priority situation it is indicated fair treatment will be given industries manufacturing products not essential to the conduct of the war. Already many plants are reported to have been converted to manufacturing essentials.

Trade Commission Shows Its Secretive Ways

Washington, Nov. 20.—The federal trade commission, which prides itself upon its so-called secrecy as well as preposterous ideas, is employing this same secrecy in its investigation leading up to its latest preposterous idea, which is practically certain being put before congress, namely, abrogation of contracts. Judge E. H. Gary, chairman of the United States Steel Corp., may not feel flattered when he finds that the board does not yet know whether it has heard from him or not. L. L. Bracken, clerk to the board, and Francis Walker, an investigator for the commission, who has the abrogation matter in hand, each declared they did not know if the judge's reply is among the letters received.

It is evident the commission does not want the public to know what Judge Gary and other leading manufacturers and business men think of their proposition. Mr. Bracken said the commission itself cannot undertake abrogation of contracts. This bit of news was immediately followed by the statement that the investigation is to aid the Pomerene bill, which, without any assistance from the trade commission, is as drastic a piece of legislation as was ever proposed. It would give the government absolute control of the steel industry from the mining of ore to the marketing of finished products.

Where the President stands on this bill is not known. Senator Pomerene, author of the bill, which is likely to be rewritten by the trade commission, is one of the President's right-hand men in congress. But the war industries board, in which the President apparently has great faith, is known to be opposed to the Pomerene bill and the trade commission's abrogation theories.

Explains Liberal Japanese Steel Shipments

Washington, Nov. 20.—Steel now being shipped to Japan and much of that on the Pacific coast awaiting shipment is represented by the tonnage which was licensed prior to Aug. 10 or has been renewed since. This is the explanation made at the exports bureau of the war trade board disclosed in THE IRON TRADE REVIEW last week. How much steel was exported in October, now is being sent or is yet to be exported under conditions outlined in the export bureau's explication, has not been disclosed. Future commerce reports may throw some additional light on this interesting question.

This steel, the explanation says, is

covered by licenses issued between July 15 and Aug. 10. The embargo, as affecting only those nations likely to assist Germany, became effective July 15. It was not until Aug. 10 that it was broadened to include all nations and all uses not directly contributing to the war against the Teutonic allies. Since then, according to the war trade board, not a license has been granted on steel consigned to Japan, nor, it is asserted, will any be issued until Japan has formally agreed to transfer some of her ocean tonnage to transatlantic service.

Some manufacturers and exporters may be able to produce licenses for export bearing dates later than Aug. 10, but it is further pointed out, such licenses are only renewals of those issued before Aug. 10 and bear the number of the earlier license. This was done because at the time the need of special renewal blanks was not contemplated. These blanks since have been procured.

What the Government Wants

The agreement sought with Japan is said to be for the transfer of approximately 400,000 tons of shipping for which the United States will license around 100,000 tons of ship steel, largely plates. Negotiations long have been under way, involving the war trade board, the war industries board, the navy department, the shipping board, the department of state and the Japanese embassy and special mission.

Explanation of the large tonnage of steel now on the Pacific coast is that manufacturers holding contracts for plates, shapes, etc., at the time the embargo was declared and broadened redoubled their efforts to complete as many of the contracts as possible before Aug. 10, almost to the exclusion of rolling other material. Since then only a few mills have worked on Japanese orders and only in the expectation of soon obtaining license for shipment under the embargo and the agreement. The congestion of cars with steel on the Pacific coast has resulted in a railroad embargo on consignments bound to the coast.

Mexico Puts Embargo on Shipments of Iron

Washington, Nov. 20.—Mexico has clamped an embargo on the exportation of iron in any form and especially of machinery and material which may be utilized by the railroads, according to a bulletin of *The Mexican Review*, a semi-official journal published in Washington and maintaining the closest relations with the Mexican government and the embassy here. No further explanation is made except that the order has been issued to all customs houses of the republic and is to be enforced. The recent revolutions in Mexico resulted in the burning and destruction of much rolling stock of the railroads and in the past few months much of this scrap has been shipped into the United States where high prices prevailed. This new order, however, cuts off from the United States that source of the material and diverts the scrap to Mexican steel mills.

Steel Foundrymen Take Up Price of Castings

Leading steel casting manufacturers of the country held a meeting at the Waldorf-Astoria, New York, Nov. 16, to adopt a method of procedure in establishing prices on steel castings in conformity with the recently established prices on pig iron and iron and steel products. The following committee was appointed: Chairman, G. H. Johnson, Isaac G. Johnson & Co., New York; E. S. Knisely, Bethlehem Steel Co., Bethlehem, Pa.; H. D. Hammond, American Steel Foundries, Chicago; H. E. Field, Wheeling Mold & Foundry Co., Wheeling, W. Va; S. P. Bush, Buckeye Steel Castings Co., Columbus, O.; I. W. Frank, United Engineering & Foundry Co., Pittsburgh, Pa.; H. J. Koch, Fort Pitt Steel Casting Co., McKeesport, Pa. This committee will co-operate with the general committee of the American Iron and Steel institute, to establish prices on steel castings.

Enlarges Sales Staff

Enlargement of its selling organization is announced by the W. F. Davis Machine Tool Co., 149 Broadway, New York, following the appointment of C. C. Sears, formerly engineer for the Western Electric Co., Chicago, as New York sales manager. The following have been added to its sales staff: A. L. Gath, formerly of the Gath Machinery Co., Buffalo; Harry Hartley, formerly of the Ingersoll-Rand Co., New York; Frank Meagher, formerly with the Vandyke-Churchill Co., New York; O. Eilers, formerly of Manning, Maxwell & Moore, New York, and C. W. Bonfield. Recently the company moved its offices from the fourth to the ninth floor of the Singer building, 149 Broadway, New York.

Tells How Great Britain Did Away With Strikes

Asserting that a strike in a large shipbuilding plant like the Fore River yard would be impossible in England, Capt Cyril Asquith, a member of the mission send to this country by the British munitions board, and a son of the former British prime minister, related in Boston recently the method England has used to eliminate strikes. He said the labor unions and the government have agreed to a prohibition of strikes during the war, and that a man who quits work is liable to a fine of £5, or even penal servitude for life. His talk was addressed to the members of the district draft boards of Massachusetts, and in discussing the draft the Captain said the American system was fundamentally the same as the British system, except in dealing with physical requirements and in keeping records of the men employed in government work.

"If we in England had the draft all to do over again," he declared, "we should call everybody and after keeping the men in camp for a few days would send back those fitted for machine work. We would further obtain from the men sent back a pledge to work, and retain the right to transfer them from one kind of work to another. The men sent back would be in the nature of military reservists."

Plant Well Booked

The Worden-Allen Co., Milwaukee, reports that the contracts now on its books will keep it fully occupied at least until the close of the year and probably for 30 or 60 days after Jan. 1. Only two or three contracts of any considerable size have been taken during the last week or 10 days, although a flood of small work has been accepted, involving a considerable aggregate tonnage. Two of the largest jobs are a new machine shop for the Falk Co., Milwaukee, involving 660 tons, and two buildings for the aviation field at Hampton, Va., involving 600 tons.

Adds Malleable Capacity

The Hammond Malleable Iron Co., Hammond, Ind., has under way considerable additions to its capacity. It has just started operation of an additional foundry and 35-ton air furnace and has under construction an addition, 60 x 84 feet, of concrete and brick with steel sash for a cleaning, grinding and sorting room. Three additional annealing ovens of 22-ton capacity each have just been started.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Heavy Liquidation Being Assimilated

STEEL stocks fluctuated within narrow limits last week, responding little either to good or ill news. This condition was true of the entire stock market and was due most likely to the fact that the public is neither buying stocks or selling them. It was the liquidation of investment holdings by the public which brought about the recent heavy slump in stocks and it is regarded as only natural that a period of dullness should prevail until the market has been able to absorb and digest the mass of securities then unloosed. Some observers are inclined to believe that further liquidation will be confined to companies engaged in nonessential work, but most of the stocks listed on the New York stock exchange are representative of industry essential in war. It is possible that many of these will benefit as the industrial readjustment proceeds, as they will receive priority in fuel and supplies and possibly be aided in the labor market, as the much talked of elimination of nonessential industries proceeds.

Plans No Drastic Steps

So many reports have emanated from Washington of late to the effect that the government is about to take drastic steps to do away with unnecessary industries during the war that the war industries board and the fuel administration have issued formal statements assuring American manufacturers that the government had no immediate intentions of adopting radical measures. Panicky conditions have prevailed in several large industrial centers. Many banks have refused automobile concerns' "paper" and other banking concerns loaded up with paper credits of motor car concerns, faced failure. Consequently rush calls were sent to Washington through the Federal Reserve banks to "soft pedal" the curtailment of industry program, with the result that statements were made in this connection by Judge Lovett and Dr. Garfield. The former said that with regard to the transportation of raw materials, the board would take no action "designed to eliminate any nonessential industry without reasonable notice and an opportunity to be heard." Dr. Garfield, who a week previously was ready to curtail industry right and left by the diverting of fuel shipments, went slower in his last statement, saying that unless there was voluntary economy on the part of industrial and domestic consumers "there will come a time when some limitation will have to be imposed upon manufacturers of nonessential products. Arbitrary limitation is a last resort and to be avoided if possible."

Some Pessimism is Shown

Business sentiment has been visibly depressed by the temporary triumph of the Bolsheviki and anarchy in Russia, and by the reverses to the Italian arms. In some pessimistic quarters, it is felt these developments may prolong the war by several years. But the speeding up of America's war preparation, the growing concentration of our industrial resources and the continued mobilization of our leading business men in the government's service, are a matter of good cheer in these same circles, as indicating that the force of the United States will be felt in a decisive military way much sooner than previously has been predicted.

War Ties Up Assets

No dividends on the common stock of the Moline Plow Co. will be declared on the profits of the past year, according to the annual statement of President Stephens. Profits showed a substantial increase over those of the preceding year, but the management plans to conserve these funds to handle the expected increase in business during the present fiscal year. After allowing for depreciation of fixed assets, bad debts, etc., the profits amounted to 9½ per cent on the common. Another reason for not resuming the payment of dividends on common stock, is that the company has a large amount of assets tied up in Europe. In Germany, Austria, Roumania, Poland and Scandinavia the company has $442,034; in France, Italy and Spain $923,608; in Russia and Siberia, $1,208,641. These values are stated at nearly par.

Bethlehem Steel Need Not Explain Bonuses

The application of the General Investment Co., New York, for an order requiring the Bethlehem Steel Corp. to furnish an explanation as to bonuses paid President Eugene G. Grace and others since 1911, was denied recently in the supreme court of New York. The court held that the complaint did not set forth a cause of action, but simply that a cause might be established by examination. The motion was denied without prejudice to its renewal on presentation of other papers.

Nova Scotia's Output Less

The output of the Nova Scotia Steel & Coal Co., Ltd., New Glasgow, N. S., for the months of July, August and September, fell off somewhat as compared with that of the previous quarter. The production of coal in the third quarter was 139,795 tons, compared with 152,076 tons in the preceding quarter; of ore, 7174 tons, compared with 4238 tons; of limestone, 17,067 tons, as against 20,890 tons; of coke, 25,268 tons, compared with 25,870 tons; of pig iron, 21,874 tons, compared with 21,971 tons; of steel ingots, 30,847 tons, as against 33,377 tons, and of finished steel forgings, 22,657 tons, compared with 28,908 tons.

Changes Corporate Title

The Potthoff Construction Co., Cincinnati, has changed its name to the General Iron Works Co. This announcement, which followed a recent meeting of stockholders, does not indi-

cate any change whatsoever in the management of the business. The entire holdings of W. F. Potthoff, who has not been engaged in the business for several years, have been purchased by those in active charge. The officers of the company are: President, A. E. Reuss; vice president and superintendent, T. Kluver, and secretary and treasurer, C. A. Schneider.

Carbon Steel Policy Will Remain Unchanged

While the committee of independent stockholders gained control of the directorate of the Carbon Steel Co., Pittsburgh, at the recent annual meeting of investors, the present officers were re-elected and it is announced that the same policy now in operation will be continued. Only two of the old directors were re-elected, the independents naming four and one neutral being chosen. President Charles McKnight and R. S. Baldwin were the two directors re-elected, W. H. Baker was the neutral and the others were W. D. Uptegraff, H. P. Pierpont, John Worthington and Woodward Baker. Mr. Uptegraff, who was chairman of the stockholders' committee, said: "The meeting was entirely harmonious; every action was unanimous. President McKnight announced that he would accept no further bonuses for a period of five years, and all future bonuses to be given to other employes or officers are referred to a committee consisting of W. H. Baker, Mr. Spear and myself. The present management and policies of the company will be continued."

Government Mortgage Will Be Placed on Yard

The American International Corp., which recently made contracts from the Emergency Fleet corporation for the construction of a shipyard at Hog Island, Philadelphia, to build merchant vessels for the government, has sent to its stockholders a request for their consent to the execution of a mortgage on the site. The American International Corp. asserts that contrary to the previous general understanding Hog Island will remain its property after it has executed the contract, and the mortgage will be taken by the Emergency Fleet corporation as security for the $1,700,000 advanced on the cost of construction of the yard and the ships. The American International Corp. is to obtain only a fee for building and operating the yard and constructing the ships, which is arranged on a sliding scale with bonuses for quick delivery, the contract being of the "cost-plus" type.

Financial Crop Ends

L. Goldstein Sons, Philadelphia, and Michael Levy and Joseph Frankel, New York, have completed negotiations for the resumption of operations at the Pullman Motorcar Co., York, Pa. The new owners purchased the assets of the company at a bankruptcy sale.

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The Chattanooga Gas & Coal Products Co., operating large by-product coke ovens at Alton Park, Tenn., is undergoing reorganization. The company, according to a charter just filed, will take the new title of the Chattanooga Coke & Gas Co. No material changes in the personnel or policy are contemplated. Capital will be added.

* * *

The Motor Starter Corp. has been organized under the laws of New York state with a capital of $2,000,000, to take over the patents of H. K. Stewart, one of the founders of the Stewart-Warner Speedometer Corp., and will also take over the Stewart plant at Long Island City. The company will not only manufacture self-starters, but other electrical equipment for automobiles.

* * *

Jacob Nilson of the A. H. Nilson Machine Co., Bridgeport, Conn., has been appointed temporary receiver under bonds of $50,000 of the Elliott-Cornwall Mfg. Co., maker of metal goods in the same city, which is capitalized at $150,000. All its assets are tied up in machinery and raw materials and although the assets are in excess of the liabilities the liabilities are in danger of waste through litigation.

* * *

The Engel Aircraft Co., a new $1,000,000 Ohio corporation, which operates the former plant of the Niles Car & Mfg. Co., Niles, O., is under the management of the following Cleveland men: President, H. D. Baker; vice president and production manager, A. J. Engel; secretary and treasurer, G. S. Patterson; directors, including the officers already named, C. L. Bartsche, F. C. Case, Joel H. Fuller, Stephen L. Pierce, W. D. Sayle and T. E. Thomas, Niles.

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Companies recently making provisions to increase their capital stock are as follows: Pioneer Brass Works, Indianapolis, from $10,000 to $70,000; James A. Brady Foundry Co., Chicago, from $20,000 to $600,000; Coeur d'Alene Hardware & Foundry Co., Wallace, Idaho, from $500,000 to $1,000,000; Cleveland Hardware Co., Cleveland, from $2,000,000 to $5,000,000; Bilton Machine Tool Co., Bridgeport, Conn., from $600,000 to $1,000,000; J. C. Smith Mfg. Co., Middletown, Conn., from $30,000 to $60,000; Eclipse Interchangeable Counterbore Co., Detroit, from $25,000 to $75,000; Federal Brass Works, Detroit, from $50,000 to $60,000, and the Young High Velocity Carburetor Co., Charlevoix, Mich., from $250,000 to $2,500,000.

Slag Case Briefs

Filed with Federal Court at Pittsburgh By Mills and Railroads

At the request of the United States district court, briefs in the slag rate case, affecting steel companies of western Pennsylvania, have been submitted to that tribunal. The request was made at the last hearing, which was held in Pittsburgh in October. The case relates to a suit brought against the steel interests by the railroads for the collection of unpaid freight, arising from the transportation of slag for the year ending Aug. 1, 1916. The defendants replied to the suit by stating that they must know what disposal was made of the slag before paying for its hauling. The United States court suit raised the question as to whether or not the defendants' answer was a just one. The railroads contended that if the court ruled that they must give the information demanded they could not do so because they do not possess the necessary records. Notice was given by the carriers that if a decision is rendered against them they intend to bring individual suits against each company in its incorporated state.

It will be recalled that the interstate commerce commission at Washington allowed the issuance of tariffs charging 20 cents a ton for hauling slag. The Pennsylvania service commission subsequently conducting a hearing in the case insofar as it related to traffic in Pennsylvania, held that tariffs on slag and similar refuse, so-called, should be cancelled. Appeal was taken by the railroads from the decision of the Pennsylvania commission to the superior court. The latter in October handed down a decision, reversing the finding of the Pennsylvania commission. It referred the case back to the state commission for further investigation preliminary to another decision which would dispose of the issue in accordance with the legal principles stated in the decision of the superior court. In substance this decision was to the effect that each rate should stand on its own basis. It was pointed out that if the railroads are performing a free service for the steel companies and are not doing a similar thing for others, it was a discrimination and in violation of the act to regulate commerce.

Robert Macy Gallaway, formerly president of the Atlantic Dock Iron Works Co., New York, and until his retirement this year, president of the Merchants National bank, New York, died Nov. 13 at his home in that city, aged 81.

Announces Crane Board's Personnel

Men Prominent in the Crane Building Industry Comprise New Committee—Newport New Shipbuilding & Dry Dock Co. Closes for $5,000,000 Worth of Equipment—Market Still Flooded With Crane Inquiries

DURING recent months it has frequently been said that government war requirements predominated in the machinery markets; but now it is more accurate to say that war requirements entirely comprise the machinery markets. Considerable interest is attending the efforts of the government to effect efficient arrangements by which orders may be placed and deliveries directed where most urgently needed. Steps taken some time ago by the war industries board to co-ordinate the machine tool production of the country by the appointment of a representative committee under George Merryweather, have been duplicated in the case of locomotive cranes. A committee has been named, comprised of officials of representative locomotive crane builders, as follows: A. C. Brown of the Brown Hoisting Machinery Co., Cleveland; Sheldon Carey of the Browning Engineering Co., Cleveland; Benjamin Dixn of the Industrial Works, Bay City, Mich., and J. A. MacClellan of the Link-Belt Co., Chicago. Official announcement will be made shortly as to which one of these gentlemen will be selected to act for the war industries board in its locomotive crane purchases. It is suggested in some quarters that the government later may take similar steps in its purchases of electric cranes.

Hoisting Machinery is Purchased

A large number of hoists and other equipment have been purchased recently in connection with the government's destroyer program. The Aberthaw Construction Co. has closed for 32 electric hoists for the destroyer shops which the Fore River Shipbuilding Corp. is building for the government. These are in addition to about 65 electric cranes recently purchased for this work. The American International Shipbuilding Corp. has closed for 45 electric hoists, seven electric traveling cranes and also for machines for its plate and angle shop, including a bending roll, straightening roll, six countersinking machines, six radial drills, three angle shears, eight punches, four plate shears and a friction saw. The Blake-Knowles works of the Worthington Pump & Machinery Corp., at East Cambridge, Pa., which has a contract for pumping equipment for 150 destroyers for the navy department, is buying 39 hoists and single I-beam cranes for a new brass foundry, machine shop, engine room and other shops. The Newport News Shipbuilding & Dry Dock Co. has closed for $5,000,000 worth of buildings and machinery, including bending rolls, machine tools, ship shed equipment, hoists, etc., to be used to expedite the government's destroyer program.

Shipbuilders' Needs Still Unfilled

Cargo-ship builders continue active factors in the equipment market. The Federal Shipbuilding Co. has finally received its contract for 10 9400-ton steel ships. It has not yet closed on the 10 electric traveling cranes for which it recently inquired, but is in the market for compressors and other machines. The Newburgh Shipbuilding & Mfg. Co., Newburgh, N. Y., has received a contract from the government for four 9000-ton steel ships and is figuring on crane equipment. Oscar Daniels, engineer, 3812 Woolworth building, New York, has received a contract for steel ships from the Emergency Fleet corporation and will need equipment for fitting up a yard. The New York Shipbuilding Corp. has closed for two additional locomotive cranes with the Ohio Locomotive Crane Co., Bucyrus, O., and is figuring on a special electric traveling crane. The Stone & Webster Engineering Corp., Boston, has closed for 17 electric traveling cranes for the Watertown arsenal with Pawling & Harnischfeger Co., out of the list of 46 it recently issued. A 20-ton locomotive crane has also been bought for this work. It is reported that 30 to 40 electric traveling cranes will be required for the new government ordnance base depot in France.

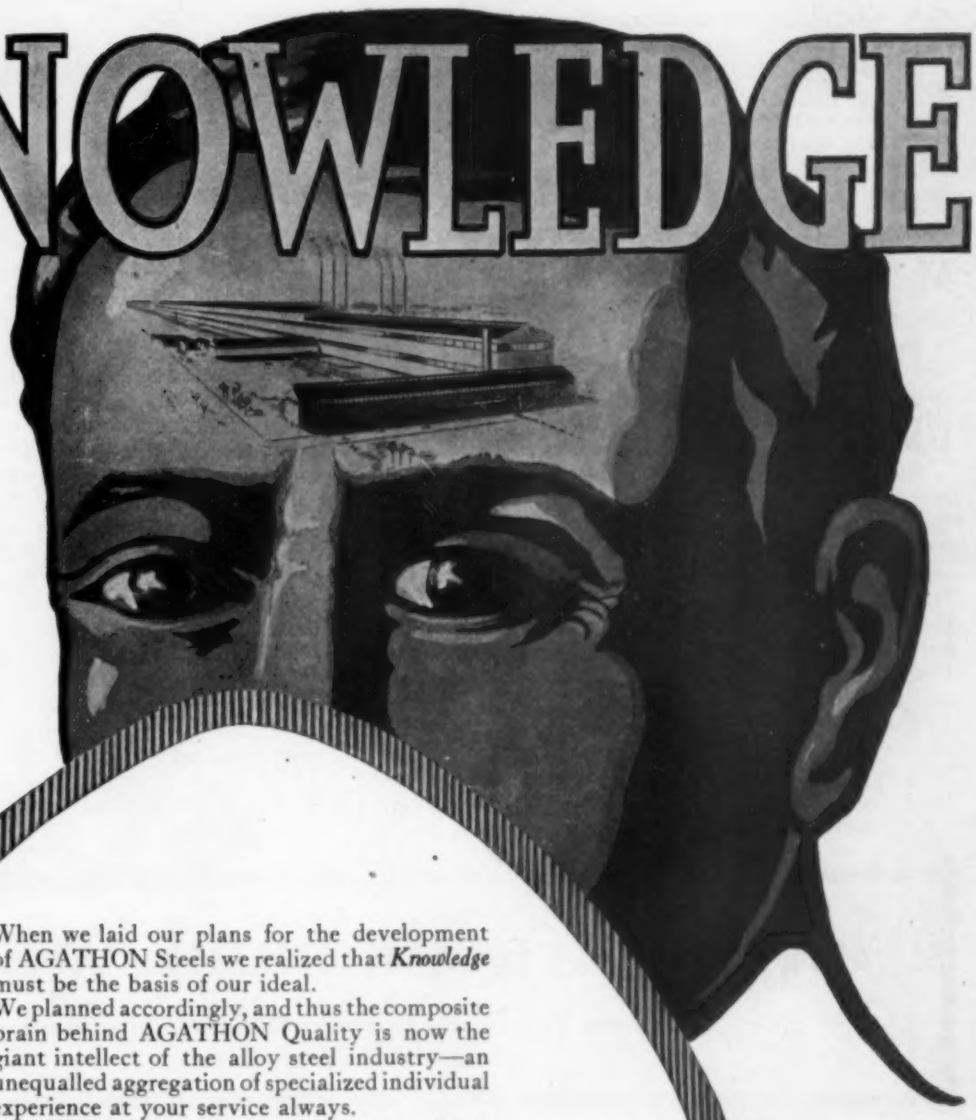
To Build 2000 Locomotive Boilers for France

The government has distributed orders for 2000 small locomotive boilers for use in generating power behind the trenches in France. The American Can Co. has received additional orders for shells from the government and has been steadily buying machine tools for its plant at Edgewater, N. J., in which the capacity is being doubled. S. B. Stine, manufacturer of haulage engines and mine falls, Osceola Mills, Pa., is inquiring for the following lists of tools, all to be electrically driven. These tools are wanted for delivery by April 1. One 15-foot mill; one 6-foot mill; one 8-foot mill; one large lathe with long bed, 16-foot centers and 3-foot swing; one heavy lathe with 8-foot bed to turn 4 feet; two lathes, 16-inch by 9-foot bed; one large radial drill; one small radial drill; one medium multiple drill; one wheel drill; one 30-inch shaper; one key seater; one 4-foot by 12-foot planer (four heads); one bolt cutter; one pipe threader; one gear cutter; one 2-inch grinder; one 8-inch grinder.

Pittsburgh Commercial Club Assists Government

PURCHASES of machinery and machine tools that are being made by plants in the Pittsburgh district engaged on government war contracts involve extremely large requirements. They cover miscellaneous lines of equipment, such as presses, shapers, lathes, grinding and milling machines. Machinery for government arsenals has also been bought. Government work predominates and the domestic trade has become only an incidental part of the machine tool builder's business. The Champion Engineering Co., Kenton, O., has taken an order for four 5-ton cranes for the Fore River Shipbuilding Corp. The government has requested the Pittsburgh Commercial club to co-operate with it in the Pittsburgh district in placing work with manufacturers. Ira C. Harper, president of the

KNOWLEDGE



AGATHON STEELS

When we laid our plans for the development of AGATHON Steels we realized that *Knowledge* must be the basis of our ideal.
We planned accordingly, and thus the composite brain behind AGATHON Quality is now the giant intellect of the alloy steel industry—an unequalled aggregation of specialized individual experience at your service always.
AGATHON Steels will serve your purpose best.

The Central Steel Company
MASSILLON, OHIO

Branch Offices

Detroit Office: 326-27-28 Ford Bldg.
F. Walter Guibert, District Representative
Cleveland Office: Hickox Building
The Hamill-Hickox Company, District Representatives
Chicago Office: 1370 People's Gas Bldg., 120 So. Michigan Blvd.
A. Schaeffer, District Sales Manager
Philadelphia Office: 603 Widener Building
Frank Wallace, District Sales Manager
J. E. Dockendorff & Co., 20 Broad Street, New York
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"AGATHON" Special Analyses
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"AGATHON" Chrome Steel
"AGATHON" High Carbon

Say you saw it in THE IRON TRADE REVIEW

club, has requested that manufacturers communicate at once with the club at its headquarters, 609 Penn avenue, Pittsburgh. The appeal is made to all in a position to handle government work on small tools and lathes. The government has notified the club that it also needs about 30,000,000 small pressed steel cups, drawings of which are on exhibition now at the Commercial club's rooms.

Government Buys Many Tools

MACHINE tool buying by the government for the Rock Island arsenal shops overshadows every other consideration. Apparently red tape is being dispensed with and orders are being put through direct without passing through the usual channels. It is estimated that equipment ordered within the past few days will amount to about $1,000,000. The situation at present in many lines is such that the buyer for ordinary purposes cannot place his order. Even in cases of contracts made some time ago but not yet delivered, it is necessary for the buyer to obtain priority certificates without which no promise of definite delivery can be made. Buyers are not encouraged to place orders for most classes of equipment at the present time, largely because of uncertain delivery. The Four Lakes Ordnance Co., Madison, Wis., has bought some equipment and has started construction work on its first building, which is to be 150 x 500 feet in size. The Chicago & Northwestern railroad has let a contract for four large machine shops to be built in Chicago. The Pacific Machine & Mfg. Co., Seattle, is building a machine shop to cost $20,000. The S. G. Knight Machinery Co., St., Louis, is planning to build a machine shop. The St. Louis Electric Works, St. Louis, is planning to build several additions to its plant.

To Build Rolls-Royce Motors

THAT many makers of automobiles are turning their manufacturing facilities to the production of airplane motors is indicated by inquiries for equipment from this source that have been current from time to time during the past few months. One of the latest of these inquiries involves a list of approximately 50 machine tools. This list has been issued by the F. B. Stearns Co., Cleveland, which, it is reported is to enter into a contract to build Rolls-Royce aviation motors. Dealers report that many makers of automobiles who have not secured truck motor or airplane motor contracts have begun a policy of retrenchment. This is evidenced in the cancellation of many contracts for machine tools. The Lake Erie Dry Dock & Mill Co., Sandusky, O., which recently was incorporated with a capital stock of $1,600,000, it is understood, shortly will enter the market for equipment. The Ohio Locomotive Crane Co., Bucyrus, O., which recently was awarded additional crane contracts is negotiating for several machine tools with Cleveland dealers. The Glenn L. Martin Co., organized a short time ago to build airplanes, is in need of tool room equipment. The Lima Steel Foundry, Lima, O., requires six milling machines. A $30,000 addition is being built by the Engel Aircraft Co., Niles, O.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

PORTLAND, ME.—The Piano Tractor Co has been incorporated to make tractors, automobiles and motor vehicles of all kinds, with $500,000 capital. B. L. Merryman, William Shepherd Linnell and William M. Bradley are the incorporators.

ATHOL, MASS.—The Athol Mfg. Co., L. S. Starrett, president, has let the contract for a brick, 2-story, 40 x 96-foot addition and a 30 x 120-foot addition to its plant.

BOSTON.—The Bernitz Method Co. has been incorporated to build steam boilers with $10,000 capital by Ernest Bernitz, Oscar Nygard and Obert Sletten, Cambridge, Mass.

BOSTON.—The Diemont Hardware Co. has been incorporated with $10,000 capital. The incorporators are Harry J. Levy, Hyman Diemont and Harry N. Gutterman, Roxbury, Mass.

BOSTON.—The Universal Sickle Bar Co. has been incorporated with a capital of $100,000. R. C. Cleveland, D. F. W. Douglas and L. N. Wheelock, Brookline, Mass., are among the incorporators.

CHELSEA, MASS.—The Panther Rubber Co., Boston, will build a brick, 2-story, 50 x 135-foot warehouse and a 3-story, 50 x 60-foot mill on Marginal street. The combined cost will be $36,000.

EVERETT, MASS.—The General Electric Co. has awarded to J. T. Wilson & Son, Nahant, Mass., the general contract for a 1-story addition to its foundry, 42 x 210 feet in size, to cost $10,000.

FALL RIVER, MASS. — The Fall River Electric Light Co. has let the contract for a brick and reinforced concrete, 1-story, 28 x 82-foot substation to cost $20,000.

HOLYOKE, MASS. — The Deane Steam Pump Co. has purchased 257,900 square feet of land on North Canal street, upon which it is erecting one addition and plans to build another. The company is making marine engines for the government.

LENOXDALE, MASS. — The Smith Paper Co., Lee, Mass., has let the contract for a 3-story, 40 x 90-foot brick mill building to cost $35,000.

NEW BEDFORD, MASS.—The Gunning Boiler & Machine Co. has let the contract for a cement block, 4-story, 36 x 134-foot foundry and machine shop on Water street.

READING, MASS.—The B. F. Sturtevant Co., Hyde Park, Mass., manufacturer of blowers, has had plans prepared for a large addition to its Reading plant.

REVERE, MASS.—The Eastern Machine Works has been incorporated with $10,000 capital. Edward A. Guay, Edward R. Berry, Malden, Mass., and others are the incorporators.

SOMERVILLE, MASS.—The Gile Marine Engine Co. has awarded to James E. Teed, Milton, Mass., the general contract for a 1-story machine shop, 60 x 100 feet in size, to cost $8000.

WATERTOWN, MASS.—The Stanley Motor Carriage Co. has let the contract for a wood and terra cotta, 2-story, 64 x 100-foot factory.

NEWPORT, R. I.—The bureau of yards and docks, Washington, will take bids shortly for a power plant to cost about $90,000.

PAWTUCKET, R. I.—J. D. Crosby has let the contract for a brick, 1-story, 60 x 184-foot manufacturing building on Farrell street.

PROVIDENCE, R. I.—The Nicholson File Co. has started work on a 2-story, 40 x 60-foot storehouse.

PROVIDENCE, R. I.—The Pilling Chain

Bonus Talks with

ROLLING MILL JIM

Well, fellows, no delays on government orders when you use "Hubbard Special" steel rolls. They sure turn out the tonnage, and make the boys extra dough to buy Liberty Bonds and to subscribe to the Y. M. C. A. War Work Fund. Take my tip and don't let Uncle Sam get sore at you—

Fall in line with

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.

Co. has been incorporated to deal in chains and machinery with $10,000 capital by John E. Pilling, Henry C. Hart and Edward M. Brennan, South Kingston, R. I.

WOONSOCKET, R. I. — The Fairmont Foundry Co. will build a 1-story plant addition, 70 x 85 feet, to cost $6000. The general contract has been let.

BRIDGEPORT, CONN. — The Fairbanks Storage Battery Co., Inc., has let the contract for a brick and concrete, fireproof, 1-story, 40 x 120-foot station to cost $20,000.

HARTFORD, CONN.—Peter A. Frasse & Co., Inc., 47 Boulevard street, have awarded the contract for the erection of a 1-story steel plant addition.

NEW BRITAIN, CONN. — The G. E. Prentine Co. has let the contract for a 37 x 70-foot addition to its factory on Berlin road.

NEW HAVEN, CONN.—The Marlin-Rockwell Co. is building several additions to its plant, including a 112 x 112-foot machine shop, a 47 x 57-foot heating plant and a 50 x 60-foot barracks.

NEW HAVEN, CONN.—The Eastern Machine Screw Co. has let the contract for a brick, mill construction, 1-story, 30 x 105-foot store house on Truman street.

NEW LONDON, CONN.—The LaPointe Engineering Co. has been incorporated with $150,000 capital. Joseph N. LaPointe, Charles S. Amadon and P. LeRoy Harwood are the incorporators.

NEW LONDON, CONN.—The bureau of yards and docks, Washington, has let the general contract for a $200,000 power house and machine shop to Bigelow & Nichols, 45 East Forty-second street, New York.

STAMFORD, CONN.—The John Davenport Co. has sold its foundry to A. B. Venesch & Co., bankers, New York, who will conduct the business. About $500,000 will be spent in improving the plant.

WATERBURY, CONN.—The Metal Specialty Co. has awarded the contract for an addition to its plant on Gear avenue.

Along the Middle Atlantic Seaboard

ALBANY, N. Y.—The Simmons Machine Co. plans a storage building to cost $21,000. Thornton W. Price, Woolworth building, New York, is engineer.

BROOKLYN, N. Y.—The Morse Dry Dock & Repair Co. contemplates building a machine shop at the foot of Fifty-sixth street, to be 1-story high and 90 x 200 feet in size. The cost will be about $20,000.

BROOKLYN, N. Y.—The National Aniline & Chemical Co. has had plans drawn for a power-house and coal storage plant at 8424 Ditmas avenue, to be 1-story high and 48 x 149 feet in size. The cost is estimated at $30,000.

BROOKLYN, N. Y.—The National Lead Co., Bradley Works, 174 Front street, has awarded the contract for a 4-story plant to cost $90,000 to the Turner Construction Co., New York.

BROOKLYN, N. Y. — The Williams-Cable Excelsior Wire Mfg. Co., 80 Ainslee street, will make alterations to its plant, to cost $16,000.

BROOKLYN, N. Y.—John M. Hubbee, 65 West Houston street, New York, plans an extension to his boiler house.

BUFFALO, N. Y.—The American Radiator Co. will build a 1-story foundry 120 x 200 feet in size, to cost $150,000. The Austin Co., Cleveland, is the contractor.

BUFFALO.—The Kellogg Structural Steel Co. has awarded to B. I. Crooker the general contract for a 1-story shop, 55 x 150 feet, to cost $10,000.

BUFFALO.—The Atlas Steel Casting Co., 1963 Elmwood avenue, will build a 1-story shop 40 x 96 feet in size, to cost $4000.

BUFFALO.—The Miller-Ulrich Machine & Tool Works has been incorporated with $20,000 capital. The incorporators include F. Muller, A. Muller and C. Ulrich.

BUFFALO.—The Ericsson Mfg. Co., manufacturer of magnetos, will build an addition to its plant, which will permit the doubling of its production.

BUFFALO.—Cousins & Son Boiler Works, 74 Wabash street, manufacturer of boilers, stacks and tanks, will erect a 1-story, 80 x 120-foot addition to its plant.

BUFFALO.—The Transmission Ball Bearing Co., 1050 Military road, has purchased a 7-acre site and will build a factory.

COLLEGE POINT, L. I.—The L. M. F. Mfg. Co., Fourth avenue and Tenth street, will build a 1-story plant, 100 x 170 feet in size, to cost $150,000.

FULTON, N. Y.—The Fulton Steel Corp., recently organized, is building a large steel foundry. G. C. Warner is in charge.

NEW YORK.—The plant of the Washburn Wire Co., which has been actively engaged in making munitions, suffered a $2,000,000 loss by fire Nov. 11.

NEW YORK.—The Bario Metal Corp. has been chartered with $90,000 capital to manufacture electric furnaces. The incorporators include P. Demiles, N. Herschlieb and H. Jenkins, 31 Park row.

NEW YORK.—The Reading Chassis & Motor Corp. has been incorporated with $100,000 capital to manufacture motors, engines, automobiles, etc. The incorporators include S. S. Shears, C. W. Bliss and E. Cahn, 233 Broadway.

NEW YORK. — The Metropolitan General Products Co. has been incorporated with $100,000 capital to manufacture machinery and tools. The incorporators include L. S. Enrich, W. H. Jeffers and M. V. Abraham, 128 Broadway.

OSWEGO, N. Y. — The Arrowhead Mills Co., Inc., has increased its capital stock from $250,000 to $1,000,000 to provide for extensive additions to its sulphuric plant at Battle Island.

ROCHESTER, N. Y.—The city will vote on a $75,000 bond issue to provide for extensions to its waterworks system. E. T. Elwood is city engineer.

ROCHESTER, N. Y.—The Bridgeford Tool & Machine Corp. has awarded the contract for a plant addition 1-story high and 90 x 200 feet in size to the Crowell-Lundoff-Little Company.

ROCHESTER, N. Y.—The Bausch & Lomb Optical Co., St. Paul street, has let the contract for a $12,000 addition to its plant.

SHENANGO FALLS, N. Y.—The Binghamton Bridge Co., Binghamton, N. Y., contemplates the construction of a hydroelectric plant.

ELIZABETHVILLE, PA.—The foundry of the Slaw Wagon Co. has been damaged by fire.

LEWIS RUN, PA.—The United Natural Gas Co. plans to erect a plant, to cost about $150,000.

MEADVILLE, PA.—The Meadville Malleable Iron Co. has awarded the contracts for a new reinforced concrete foundry. The building will be three stories high and 35 x 120 feet in size.

PHILADELPHIA. — The Essick Construction Co. is preparing plans for a plate and angle shop, 297 x 614 feet in size, for the shipyard of the American International Corp. at Hog Island.

PHILADELPHIA. — John T. Lewis Bros. Co., Lafayette building, will build an addition to its oxide plant and furnace house, 3 stories high, and 40 x 120 feet in size, to cost $150,000.

PHILADELPHIA. — Frank E. Hahn will receive bids soon on a 6-story, 22 x 100-foot brick, steel and concrete warehouse for S. Sklaroff.

PHILADELPHIA.—The Dunbar Auto Body Co., Thirty-seventh and Market streets, will build a 4-story plant addition.

PHILADELPHIA. — The bureau of yards and docks, Washington, will build a warehouse to cost $400,000.

READING, PA.—The Carpenter Steel Co. will build a 1-story annealing furnace plant 39 x 112 feet in size to cost $8000.

WILKES-BARRE, PA.—The Sheldon Axle & Spring Co., Conyham avenue, will build a 2-story extension to its axle department, 60 x 200 feet in size.

ARLINGTON, N. J. — The F. H. Lovell Co., brass goods, has awarded the contract for a 2-story addition to its plant, to cost about $35,000.

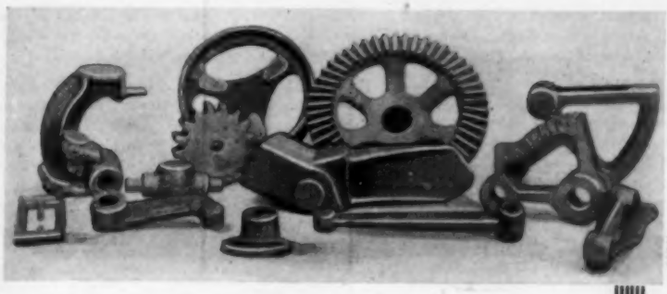
CAMDEN, N. J.—The New York Shipbuilding Co. has taken out permits for a group of buildings to include a 133 x 140-foot addition to its machine shop; three structural steel buildings 270 x 460 feet, over the ways; a steel trestle 54 x 784 feet; a 1-story, 60 x 91-foot addition to its forge shop; two brick buildings, 50 x 66 feet each; and other improvements. The cost will be approximately $537,500.

CAMDEN, N. J.—The International Shipbuilding Corp. has awarded to Lewis F. West the contract for a 2-story addition to cost $10,000.

COMMUNIPAW, N. J.—A contract has been awarded to Westinghouse Church Kerr & Co., 37 Wall street, New York, for the design and construction of a boiler plant at the coaling station of the Central Railroad of New Jersey. A transmission line will be built from the railroad's power plant to this coaling terminal.

IRVINGTON, N. J.—The American File Reclaiming Co. has been chartered to manufacture files. The incorporators are William J. Magee, Isidor Niner and M. Wilkes, New York.

JERSEY CITY, N. J. — The Bethlehem Shipbuilding Corp. has been chartered with $15,500,000 capital to build and repair ships.



A Few of Our Products

FARRELL-CHEEK STEEL FOUNDRY CO.

SANDUSKY, OHIO

BRANCH OFFICES

NEW YORK PHILADELPHIA CHICAGO

WE SPECIALIZE

Emergency Service!

Emergencies demand quick action; but, if you are a user of ***small steel castings*** you have learned that ***quick action*** is mighty hard to get!

Our Emergency Service will prove of priceless value to you.

We guarantee quick action—and this is how we do it: In anticipation of emergencies, we hold 30% of our entire capacity open. This enables us to give you your castings right when we tell you we will. Users of small steel castings who depend upon us, call this service "FARRELL-CHEEK" service. And they feel well rewarded too, for the quality of our castings is unsurpassable.

When you require

Small Steel Castings

for

Tractor Work, Machine Tool Work, Truck Work, etc.

and

Blank Gears and Carbonizing and Case Hardening Boxes

WRITE US

H. E. Lewis, J. W. Pewell and Henry S. Snyder, New York, are the incorporators.

JERSEY CITY, N. J.—The Everlasting Valve Co., West Side avenue, plans to erect a $15,000 addition to its machine shop.

NEWARK, N. J. — The Ampere Supply Co., 216 Berlin street, has awarded the contract for a $14,000 addition to its foundry.

NEWARK, N. J.—The Saylor Tool Works has been chartered with $50,000 capital to manufacture tools. Harry M. Saylor, Frank W. Bird and Charles E. Patterson are the incorporators.

NEWARK, N. J.—The DeVoe-Smith Co. has been incorporated with $50,000 capital to manufacture automobiles. Prescott S. Smith, Alonzo DeVoe and Lester A. DeVoe, Ridgewood, N. J., are the incorporators.

NEWARK, N. J. — The A. W. Wheaton Brass Works, 157 New Jersey Railroad avenue, will construct a 1-story plant addition, 50 x 50 feet in size to cost $5000.

NEWARK, N. J.—Dilworth, Lockwood & Co., 260 West street, New York, manufacturers of iron and steel, will erect a 1-story shop on Frelinghuysen avenue. Plans have been prepared.

NEWARK, N. J.—The Essex Foundry Co., Murray street, has awarded the contract for its new 1-story factory.

NEW BRUNSWICK, N. J.—L. Adler & Co. has been organized with $25,000 capital to manufacture electrical fixtures. The incorporators include Louis P. Ruck, Robert Rosen, Louis Adler, Bound Brook, N. J., and others.

NEW BRUNSWICK, N. J.—The Simplex Automobile Co. will manufacture airplane engines. The company is in the market for a number of machine tools required in this work.

NEW BRUNSWICK, N. J.—The Wright-Martin Aircraft Corp. has awarded to Westinghouse Church Kerr & Co., 37 Wall street, New York, the contract for building a large extension to its aluminum foundry.

TRENTON, N. J.—The Luzerne Co., Muirhead avenue, will erect new boiler house and install two new boilers at a cost of $20,000. Bruce Bedford, 22 Fisher place, is president.

TRENTON, N. J.—The Empire Tire & Rubber Corp. contemplates expending $220,000 for factory additions and new machinery. J. C. Murray, 800 Riverside avenue, is treasurer.

DOVER, DEL.—The Beaver River Power & Light Co. has been chartered with a capital of $400,000 and will build a power plant. The incorporators are C. L. Rimlinger, M. M. Clancy and Clement M. Egner, Elkton, Md.

DOVER, DEL. — The Little Giant Truck Co. has been organized with $50,000 capital to manufacture automobile trucks. The incorporators are C. L. Rimlinger, M. M. Clancy and Clement M. Egner, Elkton, Md.

WILMINGTON, DEL.—The plant of the Pyrites Co., Christiana avenue, has been damaged by fire with a loss of $75,000.

WILMINGTON, DEL.—The Roach Automobile Rotary Safety Brake Co. has been incorporated to manufacture safety brakes with a capital of $1,000,000. The incorporators are Mahlon Van Booskirk, Henry R. Heyl and A. P. Stevenson.

BALTIMORE.—The American Propeller & Mfg. Co., 233 East Hamburg street, has awarded the contract for the erection of a 2-story, 150 x 200-foot brick addition to its plant. The cost will be about $5000.

BERKELEY, VA.—The Guardian Motor Co. contemplates building a 1-story plant, 100 x 500 feet in size, to cost $750,000. B. C. Bownell, Norfolk, Va., is in charge.

WASHINGTON.—The bureau of yards and docks will take bids soon on a forge shop addition to cost $155,000.

WASHINGTON.—The bureau of yards and docks plans to build a 6-story storehouse 187 x 250 feet in size, to cost $400,000.

WASHINGTON.—The bureau of yards and docks has had plans drawn for an extension to its steel foundry to cost $175,000.

WASHINGTON. — Warren, Moore & Co., Philadelphia, have been awarded the contract for a 6-story, 162 x 502-foot gun factory at the navy yard. The contract price is $1,048,000.

Activities in the Central States

APPLETON, WIS.—The Eagle Mfg. Co., gasoline engines, farm tractors, etc., has increased its capital from $200,000 to $500,000 to provide for enlarging its factory. The company has purchased a site adjoining its present plant, on which the proposed extensions will be built. Frank Saiberlich is president and general manager.

DODGEVILLE, WIS.—The mill of the Lucky Five Mining Co. has been severely damaged by fire. The loss is estimated at $20,000.

KENOSHA, WIS.—Lippert & Rhenstrom, machinists, have awarded the general contract for the erection of a $20,000 plant addition to P. J. Eiffler. New equipment is being purchased.

KIEL, WIS.—The Thomas S. Watson Co., consulting engineer, Majestic building, Milwaukee, has awarded the contracts for a 1-story, 80 x 320-foot factory addition and a power plant for the Kiel Woodenware Co.

MADISON, WIS.—Contracts will be awarded Nov. 15 for the erection of the plant of the Cruiser Motor Car Co. The company was recently organized with a capital of $250,000 to manufacture automobiles. The factory will be 1-story high and 60 x 250 feet in size, with sawtooth roof. W. J. Burdick, 611 Gay building, is general manager.

MILWAUKEE. — The Milwaukee Electric Railway & Light Co. will build a 3-story substation, 40 x 40 feet in size, under the Sixteenth street viaduct.

MILWAUKEE.—A $40,000 factory addition will be erected by the American Grinder Mfg. Co., Twenty-second and Sycamore streets. It will be 85 x 120 feet in size and two stories high, of reinforced concrete and brick, with steel sash. The general contract has been awarded to the Coddington Engineering Co., North Milwaukee.

MILWAUKEE.—Architect A. J. Schutte, 412 Camp building, will prepare plans for a proposed new truck factory. The first unit will be 1-story high and 50 x 150 feet in size, with sawtooth roof. With new equipment the building will cost about $50,000. One 3-ton electric traveling crane will be required.

RACINE, WIS.—Architect A. S. Hecht, 154 West Randolph street, Chicago, has awarded the contracts for the erection of a $200,000 dock and terminal warehouse for the Chicago, Racine & Milwaukee railroad.

RACINE, WIS.—A. A. Guilbert, architect, will receive bids until Nov. 17 for erecting a fireproof warehouse, 4 stories high, 105 x 125 feet in size, for the J. I. Case Plow Co. The building will cost about $50,000.

DETROIT.—The States Engineering Co., 514 Free Press building, is taking bids for a 1-story shop building 50 x 145 feet in size.

DETROIT.—Dodge Bros. plan to build a munitions plant 80 x 600 feet in size, to cost $1,500,000.

DETROIT.—F. F. Van Tuyl, engineer, 1112 Union Trust building, is preparing plans for a light and power plant for Wayne county, to cost $100,000.

DETROIT.—Contracts have been awarded by George W. Graves, architect, for a 2-story brick and steel factory to be erected by the Detroit Nut Co. on Hubbard avenue.

PONTIAC, MICH.—The plant of the Pontiac Pattern & Machine Co., Mill street, has been damaged by fire with a loss estimated at $45,000. The company will rebuild.

RIPLEY, MICH.—The Superior Ore Milling Co. has awarded the general contract for the erection of a new regrinding plant to H. F. Key, Hancock, Mich. The building will be 150 x 200 feet in size.

BELLEVILLE, ILL.—The U. S. Smelting Furnace Co. is building a 1-story factory 50 x 150 feet in size, to cost $50,000. George B. M. Rodgers is general manager.

CHICAGO. — The International Harvester Co., 606 South Michigan avenue, is building a 3-story plant at 2600 West Thirty-first street, to cost $175,000.

CHICAGO.—The Mineral Pulverizing Co. has been organized with $30,000 capital to treat ores and minerals.

CHICAGO.—The Central Steel & Wire Co. has bought two and one half acres in the central manufacturing district. The company's building plans have not been disclosed.

CHICAGO.—The Chicago & Northwestern railroad has awarded a contract to the C. W. Gindele Co., 3332 South La Salle street, for four 1-story machine shops. The total cost will be $75,000.

CHICAGO.—The Empire Auto Sheet Metal Works has been chartered with $10,000 capital. The incorporators include Howard F. Leopold, Sidney Adler and R. Aronson.

ANDERSON, IND.—G. A. Robinson has completed his new foundry building at Sixth and John streets, for the manufacture of brass and aluminum castings.

SOUTH BEND, IND. — The Singer Mfg. Co. will build a 1-story 60 x 150-foot addition to its foundry. The estimated cost is $15,000.

SOUTH BEND, IND.—The Oliver Chilled Plow Works has been granted a permit to erect a 1-story 96 x 157-foot addition to its warehouse. The cost will be about $15,000.

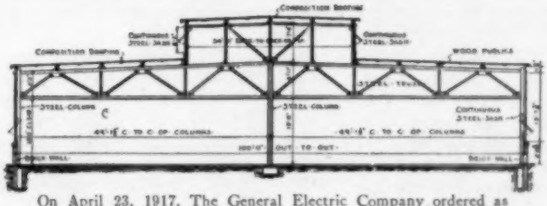
TERRE HAUTE, IND.—The A. L. Greenberg Iron Co. is building a 1-story factory.

AKRON, O.—Bids will be received until Nov. 22 for furnishing and installing piping and blow-off connections for the water works pumping station. C. F. Beck, director of public service, is in charge.

AKRON, O.—Fichter & Booker, architects, Second National Bank building, have awarded to H. Foure & Son, 317 West Market street,

An Austin Standard Factory-Building Built for The General Electric Company at Schenectady, N. Y., in Thirty Working-Days

Austin Standard Factory-Buildings Can be Occupied in 30 Working-days



On April 23, 1917, The General Electric Company ordered as Building 89, 300 linear feet of this Austin Standard No. 3 Building, 100 feet wide.

Building No. 89 of The General Electric Company at Schenectady, N. Y., on May 19, 1917, 21 working-days after day of order. The steel is more than half up and the roof is going on.

Exterior of Building 89 of the General Electric Company on May 31, 30 working-days after the order. Finishing this building on time last June brought us orders for five more buildings for the same customer, all of which have been finished *on time or ahead of time.*

YOU can move into a new Austin Standard Factory-Building in thirty working-days from the day you sign an Austin *Thirty-Day Guaranteed-Delivery Contract.*

This is possible because the Austin Company—subject to prior sale—actually has all the materials in stock ready for immediate shipment.

You can close the contract for which you are negotiating, buy your machinery for delivery at a given date, and buy your building on the same basis: from a catalog, at a given price, for guaranteed delivery, ready for occupancy in thirty working-days. By Austin working days we mean all days exclusive of Sundays or Holidays when the weather allows more than one-half the usual crew to work more than one-half the usual number of hours.

Write, phone or wire the office nearest the proposed work.

The Austin Company

INDUSTRIAL BUILDERS

Cleveland, Ohio

New York Philadelphia Pittsburgh Detroit Indianapolis

Export Representatives: American Steel Export Co., Woolworth Bldg., New York

the general contract for a brick warehouse to be built by the L. G. Federman Co., 84 South Main street.

ASHLAND, O.—The Ashland Brass Foundry Co. has been established by James and Waldo Kuffman, who are building a plant for the manufacture of brass and aluminum castings.

BEDFORD, O.—The Owen Tire & Rubber Co. is having plans prepared for a fireproof factory to cost $800,000. W. C. Owen & Co., 1900 Euclid avenue, Cleveland, are the architects.

CINCINNATI.—The main factory of the Nivison-Weiscopp Co., Main street, has been damaged by fire with a loss of $100,000. Rebuilding will start at once. Henry Siebel, secretary of the company, is in charge.

CINCINNATI.—The P. W. Drackett Sons Co., Pickering building, has secured a permit to build a 2-story brick factory on Spring Grove avenue. The building will cost about $100,000.

CLEVELAND. — The Cleveland Precision Tool Co. has been chartered with $10,000 capital by Robert T. Snell and Harry H. Hawk.

CLEVELAND.—The Elgin Brass Co. has been incorporated with $50,000 capital by John A. Mangan, M. A. Freeborn and others.

CLEVELAND. — The Baltimore & Ohio railroad has filed plans for a freight house to be built on West Third street.

CLEVELAND.—The C. & M. Fence & Galvanizing Co. has been incorporated with $35,000 capital. The incorporators include Ralph J. Crane, Thomas A. Crane, A. J. Bradley and others.

CLEVELAND. — The American Steel & Wire Co. has filed plans for a $4200 manufacturing building and a $5400 shipping building to be erected at Campbell road and the Ohio canal.

LONDON, O.—The Thomas & Armstrong Co. contemplates erecting a 70 x 300-foot warehouse and storage building to cost $40,000. The proposed site is a 2-acre tract upon which the company has an option.

MASSILLON, O.—The Austin Co., 14230 Euclid avenue, Cleveland, has been awarded the contract for the erection of a $40,000 factory for the Reliance Mfg. Co.

NILES, O.—The Engel Aircraft Co. has awarded to the Hunkin-Conkey Construction Co., Cuyahoga building, Cleveland, the contract for a plant addition to cost $30,000.

YOUNGSTOWN, O.—The plant of the American Sintering Co., Poland avenue, together with machinery valued at $75,000, has been damaged severely by fire. The company will rebuild shortly. C. B. Kelley is manager.

CLARKSBURG, W. VA.—The foundry of J. F. Osborn's Sons has been damaged by fire with a loss of about $2000.

FAIRMONT, W. VA. — The Mononga Glass Co., Twelfth street, has awarded the Ferro Concrete Construction Co., West Eighth street, a contract to erect a 4-story addition to its factory, to cost $250,000.

Western and Intermountain Territory

DULUTH. — The Zenith Furnace Co. is building a $50,000 machine shop and storage building.

BURLINGTON, IOWA.—The Northwestern Stamping Co. will build a plant 100 x 130 feet in size.

WATERLOO, IOWA.—The Waterloo Gasoline Engine Co. will build a 1-story, 120 x 525-foot concrete and brick foundry. The Black Hawk Construction Co. is engineer.

ST. LOUIS.—The W. G. Knight machinery Co. has bought a site and will build a machine shop for the manufacture of tools and machinery.

ST. LOUIS.—The St. Louis Electric Works, 4060 Forest Park, manufacturer of electric fixtures, has increased its capital from $20,000 to $100,000 to provide for plant additions.

ST. LOUIS. — The Foerster-Kaysing Iron Co., 2710 North Twenty-fifth street, has bought a foundry building, which it will remodel.

ST. LOUIS. — The Old Forge Landing Iron & Steel Co., recently incorporated to manufacture pig iron, will build a furnace. R. O. Smith, 3420 Washington avenue, St. Louis, secretary of the company, is in charge.

STUTTGART, ARK.—The Nichols Pump & Well Co. has been incorporated with $50,000 capital. The incorporators are J. P. Nichols, H. C. Duckett and H. C. Hollis.

DALLAS, TEX.—The Houston & Texas Central railroad is having plans prepared for new freight terminals and a belt line to cost $1,000,000.

EL PASO, TEX.—The Fireplace Hot Water Heater Co., recently incorporated, will build a plant to manufacture water heaters.

WICHITA FALLS, TEX. — The Wichita Cotton Harvester Co. will build a plant to manufacture cotton harvester machinery, J. A. Kemp is manager.

TULSA, OKLA.—The Fortier Electric Mfg. Co., 1317 Carson street, is equipping a plant to manufacture electrical devices and is in the market for equipment. U. D. Fortier is manager.

TULSA, OKLA.—The Western Rope & Mfg. Co., J. K. Bradley, manager, will build an addition to its plant to provide for the manufacture of boilers and gas engines.

WINFIELD, KANS.—Bonds for $130,000 will be sold to build a waterworks pumping station. J. M. Bradley is city engineer.

WITCHITA, KANS.—The Ben Sibbett Iron & Foundry Co. has been chartered with $30,000 capital.

COLLINS, IDAHO. — The Oregon Short Line railroad will construct a 7½-mile branch. The work will cost about $143,200.

SALMON, IDAHO.—The Drilling Development Co. contemplates erecting a 1000-ton mill. Guy W. Stapleton and C. W. Sherwood are in charge.

Up and Down the Pacific Coast

SEATTLE.—The Cooley Mfg. Co. will build a brass foundry and contemplates other additions to its plant.

SEATTLE.—The Pacific Machine & Mfg. Co., J. F. Lidral, president, will build a machine shop to cost $20,000.

SEATTLE.—The Puget Sound Machinery Depot Co. has purchased a 300 x 600-foot site at First avenue and Spokane street. Buildings will be erected and new machinery installed for the manufacture of marine boilers, shafting, and other marine equipment. The cost of the proposed buildings and equipment is estimated at $1,000,000. A. I. Garrett is president of the company.

SEATTLE.—The American Nitrogen Products Co., Securities building, which has a large plant at La Grande, Washington, is making surveys for a railroad to serve its proposed $3,000,000 dam at the North Fork of the Sauk-Suiattle river. The railroad will be 18 miles long.

TACOMA, WASH.—The Tacoma District Heating Co. contemplates the extension of its underground heating system by installing a high pressure line from its power plant to Tenth avenue.

PORTLAND, OREG. — King Bros., 711 East Eighteenth street, boiler manufacturers, will build an addition 40 x 60 feet in size.

PORTLAND, OREG.—The commission of public docks has authorized the building of a spur track from the Oregon-Washington Railroad & Navigation Co.'s line to the municipal dock at St. Johns. The work will cost about $24,000.

PORTLAND, OREG.—The Premier Engine Works, recently incorporated with $200,000 capital, will build a plant to manufacture machinery and marine equipment.

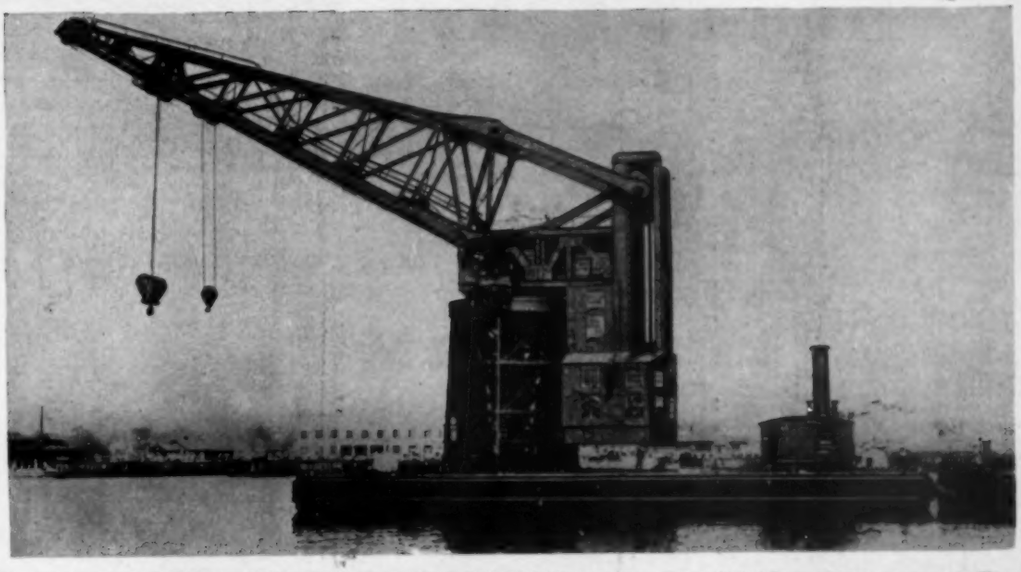
SALEM. — The Salem Iron Works, 117 North Front street, is adding to its equipment.

LOS ANGELES.—The Universal Tool Co. will build a plant to manufacture wrenches and tools.

SAN FRANCISCO.—The Fowler Airplane Corp., 128 Twelfth street, has purchased a site and will build a 1-story frame and corrugated iron factory covering 50,000 square feet. The company contemplates the erection of an office building and several other factory buildings.

SAN FRANCISCO.—The John Center Co. is building a 2-story machine shop 100 x 120 feet in size, to cost $32,000.

UPLANDS, CAL. — W. G. Schell has bought the plant of the Uplands Foundry & Machine Co. which he will equip for the manufacture of heaters and distillate burners.



150 Ton Revolving Pontoon Crane

Electrically Operated

This crane was built on order of the United States Government for the Norfolk Navy Yard by The Wellman-Seaver-Morgan Company.

Another 150 Ton Crane of the revolving type is now being built for the Mare Island Yard at San Francisco. Besides these, the Wellman-Seaver-Morgan Company has built the following large floating cranes—all for Government Service:

One 100 Ton Pontoon Crane for Bremerton Yard, Seattle, Wash.
One 150 Ton Pontoon Crane for Boston Yard, Boston, Mass.
One 150 Ton Pontoon Crane for Pearl Harbor Station, Hawaii.

Send for new Bulletin No. 6 which explains the adaptation of floating cranes to commercial harbor and shipyard activities.

Principal Products of The W·S·M Company

Steel Plant Equipment:
Manipulators, Furnaces, Charging Machines, etc.
By-Product Coke Oven Machinery.
Shipyard Cranes.
Hoisting and Mining Machinery.
Ore and Coal Handling Machinery.
Special Large Cranes.
Gas Producers, Gas Valves.
Hydraulic Turbines.
Johnson Hydraulic Valves.
Steel Castings.

WELLMAN SEAVER MORGAN COMPANY
CLEVELAND
OHIO U·S·A

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports.

Old range Bessemer, 55 iron	$5.95
Mesabi Bessemer, 55 iron	5.70
Old range non-Bess., 51½ iron	5.20
Mesabi non-Bess., 51½ iron	5.05

Port Henry Ores, non-Bessemer, Per Unit, Delivered Eastern Pennsylvania.

Old Bed, crude 55 iron	10.50c to 11.00c
Old Bed., concent., 65 iron	11.00c to 11.50c
Harmony, concent., 63 iron	11.50c to 11.75c
Lump (at mines)	$5.75c

WAREHOUSE PRICES

Steel bars, Chicago	4.10c
Steel bars, Cleveland	4.00c
Steel bars, Detroit	4.085c
Steel bars, Philadelphia	4.10c
Steel bars, New York	4.10c
Steel bars, St. Louis	4.17c
Steel bars, Cincinnati	4.08c
Steel bars, St. Paul	4.22c
Steel bars, Buffalo	4.05c
Iron bars, Buffalo	4.65c
Iron bars, Chicago	4.10c
Iron bars, Cleveland	3.95c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.17c
Iron bars, Cincinnati	4.67c
Iron bars, Philadelphia	4.50c
Iron bars, New York	4.50c
Shapes, Chicago	4.20c
Shapes, Detroit	4.185c
Shapes, St. Louis	4.27c
Shapes, St. Paul	4.32c
Shapes, New York	4.20c
Shapes, Cleveland	4.10c
Shapes, Philadelphia	4.20c
Shapes, Buffalo	4.15c
Shapes, Cincinnati	4.18c
Plates, Buffalo	4.40c
Plates, Chicago	4.45c
Plates, Detroit	4.435c
Plates, St. Louis	4.52c
Plates, St. Paul	4.57c
Plates, New York	4.45c
Plates, Cleveland	4.35c
Plates, Philadelphia	4.45c
Plates, Cincinnati	4.43c
No. 10 blue anl. sheets, Chi.	5.45c
No. 10 blue anl. sheets, Cleve.	5.00c
No. 10 blue anl., Buffalo	5.40c
No. 10 blue anl., shets, St. L.	5.52c
No. 10 blue anl. sheets, Cinci.	5.68c
No. 10 blue anl. sheets, St. Paul	5.57c
No. 10 blue anl. sh., Detroit	5.435c
No. 28 black sheets, Chgo.	6.45c
No. 28 black sheets, Cleve.	6.35c
No. 28 black sheets, Cinci.	6.43c
No. 28 black, Detroit	6.435c
No. 28 black sheets, St. L.	6.52c
No. 28 black sheets, St. Paul	6.57c
No. 28 galv. sheets, Chgo.	7.70c
No. 28 galv. sheets, Cleve.	7.60c
No. 28 galv. sheets, Cinci.	7.68c
No. 28 galvanized, Detroit	7.685c
No. 28 galv. sheets, St. L.	7.77c
Hoops, Cleveland	8.00c
Hoops, Detroit	6.50c

IRON AND STEEL SCRAP

STEEL WORKS USE

(Gross Tons)

Bundled sheets, Pittsburgh	$22.00 to 23.00
Bundled sheets, Cleveland	21.25 to 22.00
Bundled sheets, Buffalo	19.00 to 20.00
City wrought, short, N. Y.	24.00
Frogs, switches, guards, St. L.	29.00 to 29.50
Heavy melting steel, Pitts.	30.00
Heavy melting steel, Buffalo	29.00 to 30.00
Heavy melting steel, Chgo.	28.50 to 29.50
Heavy melt'g steel, Cleveland	28.00 to 29.00
Heavy melting steel, Cinci.	25.00 to 25.50
Heavy melting steel, east. Pa.	26.00 to 28.00
Heavy melting steel, N. Y.	24.00
Heavy melting steel, St. L.	29.00 to 29.50
Heavy melting steel, Birming.	20.00 to 22.50
Hydraulic press, sheets, Cleve.	24.00 to 24.50
Hydraulic press, sheets, Pitts.	24.00 to 25.00
Hydraulic press, sheets, Chgo.	24.00 to 25.00
Low phos. steel, Buffalo	39.00 to 40.00
Low phos. steel, Pittsburgh	38.00 to 40.00
Low phos. steel, eastern Pa.	35.00 to 37.00
Shoveling steel, Chicago	27.50 to 28.00
Shoveling steel, St. Louis	27.00 to 27.50
Steel rails, short, Chicago	34.00 to 34.50
Steel rails, short, Cleveland	31.00 to 31.50
Steel rails, short, St. Louis	36.50 to 37.00
Steel rails, old, Birmingham	22.00 to 24.00
Stove plate, Cincinnati	15.50 to 16.00
Stove plate, St. Louis	16.50 to 17.00
Stove plate, N. J. points	18.50 to 19.00
Stove plate, Birmingham	17.50 to 18.00
Stove plate, Buffalo	20.00 to 21.00
Stove plate, eastern Pa.	22.00 to 23.00
Stove plate, Cleveland	19.00 to 20.00
Stove plate, Pittsburgh	20.00 to 21.00
Cast iron borings	11.00 to 12.00

(Net Tons)

Boiler plate, cut, No. 1, Chgo.	$18.00 to 19.00
Boiler plate, cut, No. 1, St. L.	18.50 to 19.00
Bundled sheets, Cincinnati	16.50 to 17.00
Knuckles, coup., Chicago	34.50 to 35.50
Knuckles, coup., St. Louis	30.50 to 31.00
Springs, Chicago	37.50 to 38.00
Stove plate, Chicago	18.00 to 18.50

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$0.95
Newark, N. J.	3.50
Boston	3.70
Philadelphia	3.30
Pittsburgh	.95
St. Louis	3.18
Minneapolis, St. Paul	4.54

Buffalo to:

Albany, N. Y.	$1.26
New England (rail)	3.10
New York and Brooklyn (rail)	3.10

Virginia furnaces to:

Philadelphia	$3.27
New England	3.77
Brooklyn, Jersey City, Newark	3.32

Birmingham, Ala., to:

Boston	6.00
Cincinnati	2.90
Chicago	4.00
Cleveland	4.00
Louisville, Ky.	2.65
Minneapolis, St. Paul	5.85
New York (r. and w.)	5.75
Philadelphia (r. and w.)	4.80
Pittsburgh	4.90
Savannah, Ga.	2.75
St. Louis	3.40

Chicago to:

Des Moines	$2.80
Milwaukee	.50
Minneapolis, St. Paul	2.00
Moline, Ill.	1.15
Omaha	3.58
St. Louis	1.58

Ironton and Jackson, O., to:

Chicago	$2.54
Cincinnati	1.26
Cleveland	1.62
Detroit	1.81
Indianapolis	1.58
Minneapolis, St. Paul	4.54

Duluth, Minn., to:

Minneapolis-St. Paul	$1.25

Mayville, Wis.:

Minneapolis-St. Paul	$1.75

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	19.5 cents
Philadelphia	18.5 cents
Boston	21.5 cents
Buffalo	16.0 cents
Baltimore	18.0 cents
Cleveland	13.5 cents
Cincinnati	17.0 cents
Chicago	21.5 cents
Detroit	15.7 cents
Minneapolis and St. Paul	32.9 cents
Denver	79.0 cents
St. Louis	27 cents
New Orleans	30 cents
Birmingham	45 cents
Pacific coast (all rail)	75 cents
Pacific coast (tin plate)	75 cents

IRON MILL USE

(Gross Tons)

Busheling, No. 1, Cleveland	25.00 to 25.75
Busheling, No. 1, Buffalo	25.00 to 26.00
Busheling, No. 2, Buffalo	17.00 to 18.00
Busheling, No. 1, Pittsburgh	21.00 to 22.00
Cast borings, New York	16.50 to 17.00
Cast borings, eastern Pa.	19.00 to 20.00
Cast borings, Cleveland	18.00 to 18.50
Cast borings, Buffalo	19.00 to 20.00
Cast borings, Pittsburgh	20.00
Cast borings, Birmingham	11.00 to 12.00
City wrought, long, N. Y.	29.00 to 30.00
Forge flashings, small, Cleve.	23.50 to 24.00
Forge flashings, large, Cleve.	22.00 to 23.00
Forge No. 1, Eastern Pa.	22.50 to 23.50
Grate bars, Buffalo	20.00 to 21.00
Grate bars, Cleveland	19.25 to 20.50
Grate bars, N. J. points	18.50 to 19.00
Iron axles, Pittsburgh	42.00 to 44.00
Iron axles, Cincinnati	38.00 to 38.50
Iron axles, Cleveland	49.50 to 50.00
Iron axles, eastern Pa.	50.00 to 55.00
Iron axles, Chicago	36.00 to 37.00
Iron rails, Chicago	35.00 to 36.00
Iron rails, Buffalo	37.00 to 38.00
Iron rails, Cincinnati	32.00 to 32.50
Iron rails, St. Louis	35.50 to 36.00
Iron rails, Cleveland	40.00 to 40.50
Machine turnings, Cleve.	18.00 to 18.50
Machine turnings, Buffalo	18.00 to 18.50
Machine turnings, N. Y.	16.50 to 17.00
Machine turnings, Pitts.	20.00
Machine turnings, east. Pa.	18.00 to 19.00
Machine turnings, Birming.	17.00 to 18.00
Pipes and flues, Cleveland	23.75 to 24.75
R. R. mch. cast, No. 1, Buff.	27.00 to 28.00
R. R. wrgt. No. 1, Buffalo	34.00 to 35.00
R. R. wrgt., No. 1, east, Pa.	35.00
Railroad wrgt. No. 1, Cleve.	33.00 to 34.00
R. R. wrought, No. 1, Pitts.	35.00
R. R. wrgt. No. 1, Birming.	25.00 to 26.00
Wrought pipe, Buffalo	26.00 to 27.00
Wrought pipe, eastern Pa.	30.00 to 32.00
Wrought pipe, New York	25.00 to 26.00

(Net Tons)

Angle bars, iron, Chicago	$35.50 to 36.00
Angle bars, steel, St. Louis	25.00 to 26.00
Arch bars & transoms, St. L.	42.00 to 42.50
Arch bars & transoms, Chgo.	36.50 to 37.50
Busheling, No. 1, Chicago	23.50 to 24.50
Busheling, No. 1, Cincinnati	21.00 to 21.50
Busheling, No. 1, St. Louis	22.50 to 23.00
Busheling, No. 2, Chicago	16.00 to 16.50
Cast borings, Cincinnati	17.14
Cast borings, St. Louis	16.50 to 17.00
Cast borings, Chicago	17.00 to 17.50
Cut forge, Chicago	28.00 to 28.50
Iron axles, St. Louis	44.00 to 44.50
Iron axles, Chicago	42.50 to 43.50
Machine turnings, Chgo.	16.50 to 17.00
Machine turnings, Cinci.	17.14
Machine turnings, St. L.	16.75 to 17.25
Pipes and flues, Chicago	21.00 to 22.00
Pipes and flues, St. Louis	21.50 to 22.00
Railroad wrgt., No. 1, Chgo.	31.00 to 32.00
Railroad wrgt., No. 1, Cinci.	28.50 to 29.00
Railroad wrgt., No. 1, St. L.	31.00 to 31.50
Railroad wrgt., No. 2, Chgo.	28.50 to 29.00
Railroad wrgt., No. 2, St. L.	29.00 to 29.50

IRON OR STEEL WORKS USE

(Gross Tons)

Axle turnings, Cleveland	$22.00 to 23.00
Axle turnings, Buffalo	25.00 to 26.00
Shafting, New York	34.00
Shafting, eastern Pa.	38.00 to 40.00
Steel car axles, Birmingham	32.00 to 33.00
Steel car axles, New York	47.00 to 48.00
Steel car axles, Buffalo	45.00
Steel car axles, Cleveland	46.00 to 47.00
Steel car axles, Pittsburgh	40.00 to 42.00
Steel car axles, eastern Pa.	50.00 to 55.00

(Net Tons)

Shafting, St. Louis	30.50 to 31.00
Steel car axles, St. Louis	42.50 to 43.00
Steel car axles, Chicago	40.00 to 41.00

IRON FOUNDRY USE

(Gross Tons)

Car wheels, (iron), Pitts.	30.00 to 31.00
Car wheels, (steel), Pitts.	33.00 to 35.00
Car wheels, eastern Pa.	33.00 to 35.00
Car wheels, Buffalo	30.00 to 31.00
Car wheels, Chicago	29.00 to 30.00
Car wheels, St. Louis	27.50 to 28.00
Car wheels, Birmingham	25.00 to 30.00
Car wheels, Cleveland	26.00 to 26.50
Tram car wheels, Birming.	20.00 to 25.00
Cast, No. 1, Birmingham	22.50 to 25.00
Cast, 1, machy., N. J. points	32.00 to 33.00
Cast No. 1, Cleveland	24.75 to 25.50
Cast, 1, heavy, N. J. points	30.00
Cast, No. 1, eastern Pa.	31.00 to 33.00
Cast, No. 1, Pittsburgh	28.00 to 29.00
Malleable railroad, Cincinnati	20.50 to 21.00
Malleable railroad, Cleveland	27.00 to 27.50
Malleable railroad, Buffalo	28.00 to 29.00
Malleable railroad, Pittsburgh	28.00 to 29.00
Malleable railroad, east. Pa.	30.00 to 32.00

(Net Tons)

Cast, No. 1, Chicago	23.50 to 24.00
Cast, No. 1, Cincinnati	24.00 to 24.50
Cast, No. 1, St. Louis	21.50 to 22.00
Malleable railroad, Chicago	27.50 to 28.00
Malleable railroad, St. Louis	25.00 to 26.00
Malleable agricultural, Chgo.	22.50 to 23.50

MISCELLANEOUS USES

(Gross Tons)

Reroll. rails, 5 ft. & ov., Pitts.	$34.00 to 36.00
Reroll. rails, 5 ft. & ov., Chgo.	35.50 to 36.50
Reroll. rails, 5 ft. & ov., E. Pa.	34.00 to 37.00
Reroll. rails, 5 ft. & ov., St. L.	35.50 to 36.00
Reroll. rails, 5 ft. or ov., Cleve.	37.00 to 38.00
Rerolling rails, long, Birming.	37.50 to 38.50

(Net Tons)

Boiler punchings, Chicago	31.50 to 32.00
Locomotive tires, Chicago	35.00 to 36.00
Locomotive tires, St. Louis	32.50 to 33.00